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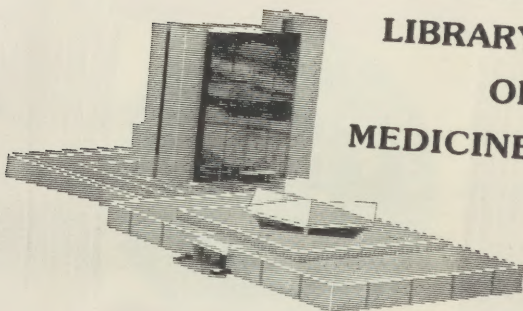
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OBSERVATIONS

UPON THE

MEDICAL DEPARTMENT OF THE BRITISH ARMY,  
MADE IN 1891. 167

ABRIDGED FROM AN OFFICIAL REPORT.

BY BREVET LIEUTENANT COLONEL ALFRED A. WOODHULL,

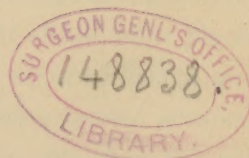
Major Medical Department U. S. Army.

[PUBLICATION AUTHORIZED BY THE SECRETARY OF WAR.]

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## NOTE OF EXPLANATION.

Having been sent to England in 1891 upon other duty, I was ordered also to "make the utmost use of such facilities as may be granted to study the British military hospitals, the Army Medical School, the duties of the Medical Officers, the Sanitary administration of Barracks and Camps, and particularly the instruction and service of the Medical Staff Corps." I was further instructed to "carefully examine the system of Physical Training in the British Army."

The action of the British War Office upon the request of our War Department opened a free way in every direction, and the personal attention of the officers with whom I came in contact was unwearying in making plain those details and minor matters whose comprehension so easily eludes a stranger. To Sir William Mackinnon, the Director General of the Army Medical Department, I am under special official and personal obligations, and by his considerate attention I was able to visit both Aldershot and Netley at the very times when classes of young medical officers were received there. At Netley public quarters, and at both Aldershot and Netley the hospitality of the mess, were extended to me; and to the medical officers at both places, who in every pleasant way made me feel at home, I am indebted for constant, intelligent, and courteous assistance in connection with my work. At all the other places that I visited on duty I was received with the same cordiality, and at Dublin and Chester the Commanding Generals extended personal courtesies as well as official favors. I repeat in this place this ac-



knowledge of those kindnesses as made in my official report, because it is the only public method in my power to express my appreciation of them.

I returned to the United States late in December, 1891, but the amount of the material to be arranged, while other duty also required attention, prevented the completion of this report until May, 1893.

I naturally hoped that my observations might reach my comrades of the Medical Corps, who were constantly in my mind as it was prepared. It was therefore particularly gratifying after the report had been filed for a year, to receive a request for its use in the Transactions of the Association of Military Surgeons of the United States. The Secretary of War has authorized such publication, and the substance of the original report thus goes before a wider congenial audience than I anticipated. It also enables me, by this reprint, to distribute to my colleagues in the permanent establishment and to other friends this laborious study of that important military organization which is most nearly akin to our own.

ALFRED A. WOODHULL.

Army and Navy General Hospital,

*Hot Springs, Ark., June, 1894.*



OBSERVATIONS UPON THE MEDICAL DEPARTMENT  
OF THE BRITISH ARMY.—ABRIDGED FROM AN  
OFFICIAL REPORT OF OBSERVATIONS MADE IN  
1891.

BY BREVET LIEUTENANT-COLONEL ALFRED A. WOODHULL,

Major Medical Department, United States Army.

[Publication authorized by the Secretary of War.]

The Medical Department of the British Army consists of about 800 commissioned officers, known as the Medical Staff,\* and about 2400 soldiers known as the Medical Staff Corps. These officers are of every grade except that of brigadier general, from lieutenant [first lieutenant] to major general inclusive, and have those titles with the prefix of surgeon to each. In the grade of lieutenant colonel there are both surgeons and brigade surgeons, the latter being the senior. The medical officers are grouped as executive and administrative, the colonels and major generals comprising the latter.

Thirty-five quartermasters, with the honorary rank of lieutenant, captain, and major, also belong to the Medical Department. They are appointed from the warrant [non-commissioned staff] officers of the Medical Staff Corps.

The number, method of appointment, designation, rank, grade, pay, tenure of office, and conditions of retirement, are not fixed by law, but may be altered by Royal Warrant, which, at least as regards

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\*Very lately designated Army Medical Staff.

pay and numbers, indirectly rests upon the annual Vote [Appropriation] for the army.

In advancing from one grade to another an officer receives no new commission, but the publication in the "London Gazette" of promotion and other changes is an official announcement for all military purposes. The Monthly Army List [Register] also is an authoritative recognition of an officer's status. His original commission is worded to cover "such promotion as he may receive in Her Majesty's Forces." A small payment is required for this original commission.

All original appointments in the Medical Staff are in the lowest grade, that of surgeon-lieutenant. These are selected from civil life either by a public competitive examination, held twice a year, for not less than half the number of vacancies that may have occurred within the preceding six months, or by selection by the Secretary of State for War from nominations by the governing body of a public school of medicine. These latter must be certified by the nominating body as qualified according to a standard laid down by the Secretary, and shall be approved by the Director General. In fact very few such selections are made, although the power is occasionally exercised; but the practical effect of the expedient is to enable the executive to fill vacancies in emergencies. Those selected rank after those examined of the same date.

A candidate for examination must have a diploma or license to practice both medicine and surgery in Great Britain and Ireland, must be of unmixed European blood and between 21 and 28 years of age. Marriage was at one time a bar, but it is not now. Age, good moral character, regular habits and probable credit to the service, are established by certificates which, with his own declaration of physical soundness, are submitted upon official forms in advance to the Director General. An entrance fee of £1 is charged against each applicant, payable when he is pronounced physically fit. A board of medical officers, not the professional examiners, determines his physical condition. He must be found free from any condition that is likely to unfit him for service in any climate. Moderate

myopia without organic disease of the eye does not disqualify, but he must not require glasses to perform any operation.

Candidates for the Army and for the Queen's Indian Service are examined at the same time, by the same Board, under the same professional tests. The number of vacancies in each service is set forth in the announcement, and candidates must declare in advance for which service they compete. The Secretary for War may reject any candidate whose bad spelling or composition shows a deficient general education. This appears to be the only direct test made of general information, and it is not applied by the Board itself.

The Examining Board is a permanent body and contains no medical officers of the army. At this time (1891) the examiners are Sir Joseph Fayrer, a distinguished retired Indian officer, in anatomy and physiology; Sir William Aitken (since deceased), a professor at Netley, in medicine and therapeutics; Mr. George J. Pollock, F. R. C. S., in surgery; and Dr. George J. Allman in chemistry, pharmacy and the natural sciences. The examiners in German and French are natives of those countries. The connection of a professor in the Army Medical School with the Board is incidental, not necessary.

The compulsory subjects and the attainable maxima are:

Anatomy and Physiology .....	1000	marks.
Surgery .....	1000	"
Medicine, including therapeutics and the diseases of women and children .....	1000	"
Chemistry and Pharmacy, and a practical knowledge of drugs .....	1000	"

The voluntary subjects and their values are:

French .....	150	"
German .....	150	"
Natural Sciences .....	300	"

The examination in chemistry is limited to the elements of the science and to its application to medicine, pharmacy, and practical hygiene. That in medicine and surgery involves diagnosis and prescription in both subjects for actual patients, and operations upon the cadaver. Modern languages are officially announced as of great importance. The natural sciences include comparative anatomy



zoology, natural philosophy, physical geography, and botany with special reference to the *materia medica*.

No candidate is eligible who does not attain at least one-third of the possible marks in each compulsory subject. Accession to the list and standing in it are determined by the aggregate marks in the compulsory and voluntary subjects. It is therefore possible, although it is not usual and perhaps never occurs, for a candidate to be accepted who does not receive more than one-third of the attainable marks in the compulsory group. And it also follows that, with so low a possible minimum, the actual minimum changes with each examination, the quality of the accepted class probably being inversely as its size; for men are accepted in accordance with but not in excess of the vacancies, nor is a high standard necessarily maintained by the establishment of a high minimum regardless of the places to be filled. Candidates technically qualified, that is, those who gain one-third or more of the compulsory marks in excess of announced vacancies, have no claim upon vacancies that may occur later. Therefore, when the vacancies are few the relative standard will be high, and when there are many it may be low. No candidate may come up more than twice. For the Indian Service candidates of Asiatic blood may compete.

It is a matter of domestic criticism that to allow voluntary subjects to count in the final standing, renders it possible for a candidate who has had special advantages in their acquisition to be classed higher than one who is his professional superior. This is said to show particularly in the Indian examination, where Hindustani may be taken as an additional voluntary. I do not think that this would be a valid objection were the professional minimum kept sufficiently high to insure unquestionable competence therein, for the few voluntaries are in the direct line of efficiency.

This abridgment does not give space to describe the examination in detail. Those interested can learn it by application to the writer, or by obtaining an extract from the full report on file in the War Department. I may express the opinion, however, that there is nothing in the entrance examination, possibly excepting a better opportunity for bedside work in it, that is as well adapted to



our purpose as our existing methods. To give the corps itself no election as to whom it may receive, to ignore the important subject of general education, to attach no value to probable "aptitude," is to assume that the Medical Department itself is incompetent to judge of official qualifications or is too biased to be equitable, and is a body of whose wants others are the best judges and into which may be injected any one who can pass certain intellectual tests of limited scope. The right of self-perpetuation is one of the bases of *esprit de corps*. The English method of establishing a very low minimum and accepting as many candidates who pass the line as may be required, may be necessary in order to keep the establishment numerically efficient. It has nothing else to commend it. It is saved from practically destroying the corps by the excess of applicants over the places, who thus force up the real minimum. As there are fewer vacancies in the Indian service, the candidates for it, speaking generally, are consciously better equipped, and I think I am right in assuming that the average standing of the accepted "Indians" is higher.

Accepted candidates become "surgeons on probation," and proceed to the Army Medical School for further instruction and final examination. They are entitled to wear undress uniform without the insignia of rank or swords, receive pay at the rate of eight shillings (\$1.92) a day, and are provided with a furnished room in public quarters or with a money allowance in lieu. They are required to take their meals at the military mess. At the conclusion of the Netley course they are examined in it by the professors, and to pass they must attain one-third of the possible marks in each subject. The marks they gain at Netley are added to those they received at the entrance examination, and they are commissioned as surgeon-lieutenants, taking rank among themselves according to their aggregate marks. Failure in the Netley examination terminates their connection with the army. The professors, in connection with the Principal Medical Officer of the General Hospital at Netley, are required to report any surgeon on probation whom, after careful observation, they believe unsuited to become an officer through faults of character or conduct. Any one so reported upon

shall not receive a commission. Those recommended for commissions as surgeon-lieutenants are then sent to Aldershot for six or eight weeks' further instruction in purely military matters. When gazetted they begin to receive pay at the rate of £200 (\$968) a year and certain allowances, and they acquire swords and the insignia of rank. The Indian candidates go to Netley, but not to Aldershot. Accounts of the two schools will appear later, if space permits. Their standing at the Aldershot examination does not affect the relative position of these young officers, but failure to pass it renders an officer liable to be sent back at his own expense to join the next class for further instruction. Having passed Aldershot, officers go on ordinary duty.

Promotion to, not including, the grade of brigade-surgeon-lieutenant-colonel ordinarily occurs by seniority, but in exceptional cases promotion to any grade may be by selection. Such special reward is occasionally given for gallantry in action or for other special service, but it does not supersede the necessity for examination, and curiously does not carry with it the officer's advance to the next higher grade when he has reached the top of the list. Thus, a captain becoming a major by special promotion remains the senior major until all whom he has passed have in turn been promoted over him. In other words, he enjoys the advantage of early and prolonged possession of a higher rank, but his ultimate advancement is not hastened thereby, neither does his advancement retard the promotion of any other. Ordinarily a medical officer becomes a surgeon-captain after three years and without examination. After twelve years' total service and an examination he becomes a surgeon-major. The examination usually takes place at the end of ten years, and is by correspondence on papers upon surgery, surgical anatomy, medicine and medical pathology by two civil teachers, upon practical hygiene by the professor at Netley, and upon military law, etc., by an administrative officer selected by the Director General. The officer must also furnish a certificate from a recognized teacher in surgery that he is a competent operator, and he must make a practical report upon a subject selected by himself. All these papers go through the Director General to the various ex-

aminers, who certify the result to the Director General. An officer who fails is given a second opportunity later, but he is not promoted until he passes.

After 20 years' total service a surgeon-major becomes a surgeon-lieutenant-colonel. The brigade-surgeon-lieutenant-colonels, surgeon-colonels, and surgeon-major-generals are selected from the respective next lower grades on the recommendation of the Director General. Certain foreign service is necessary to qualify for these higher grades, whose number is not fixed by law. They are filled at the discretion of the Secretary for War, and generally are about 50, 25, and 10.

The Director General may be taken from any grade on the active or the retired list, but almost invariably he is selected from the highest grade on the active list. He holds office for seven years, irrespective of age, unless physically disqualified. All other medical officers below a lieutenant-colonel must retire at fifty-five, or if a lieutenant-colonel or higher, at sixty. But a medical officer may be retained on active service until sixty-two, in the discretion of the Secretary. This is exercised chiefly in the case of administrative officers on foreign duty, where too frequent changes would be injudicious.

Besides these compulsory retirements, medical officers upon the completion of different lengths of service, may leave the army absolutely and receive gratuities of considerable amounts, or they may retire after fixed periods with a continuing reduced pay known as pension. The conditions under which retirements occur change from time to time, according to warrant. This voluntary renunciation of active service makes promotion relatively rapid, but at the same time the army loses many trained men in the prime of life, and the sentimental attachment to the service, which is a considerable element of efficiency, is liable to be weakened. Retired medical officers may be employed at their own request at home stations on recruiting and prison duties, when they receive additional pay. There are no longer, as formerly, regimental medical officers; but medical officers are still attached to the regiments of the Guards

for duty as such, and as far as practicable the Guards are treated in regimental hospitals.

### GENERAL DUTIES.

"The officers of the medical staff and the men of the medical staff corps will be under the control and command of the Director General of the Army Medical Department." (Queen's Regulations.)

The medical staff are charged with the medical care of the sick, the administration of military hospitals in peace and war, the command of the medical staff corps, and with the duty of recommending to the commanding officer, orally or in writing, any precautionary or remedial measures as to barracks, encampments, stations, hospitals, transports, diet, dress, drills and duties, which, in their opinion, may conduce to the health of the troops and the mitigation or prevention of disease.

The duties of medical officers with troops in quarters are the charge of the troops, attendance on officers, women and children, and sanitary duties. Each station has at least one hospital, and at the larger stations there are several. All the duties may be discharged by one medical officer, but generally there are several, of whom the senior, who may call on the others for assistance if necessary, is usually in charge of the hospital. At very large stations the medical officers in charge of the troops and of the hospital may bear no military relation to each other except common subordination to the Principal Medical Officer.

### MEDICAL INSPECTION.—[SICK CALL.]

One medical officer of rank and experience to a brigade is the ordinary proportion for this duty. Except at very small stations, an inspection room is set apart in the barracks and a permanent orderly, frequently a non-commissioned officer, not of the medical staff corps, is furnished by the commanding officer, for all medical duties. A small number of surgical appliances and a few medicines are kept there under lock and key. These are simple and elementary and are not selected by the officer prescribing. Medical inspection [sick call] is held daily in time to allow the men so designated to reach the hospital before the morning visit, which is 9 or 10 a. m., ac-



cording to season and place. A regimental non-commissioned officer carrying duplicate company sick reports, conducts all the sick of each regiment. These company sick reports are slips of paper about the size of a third of a foolscap page. They give the organization, the place and date; each man's regimental number, his rank and full name, and if married that fact; completed years of age and of service; religion; if for duty (designated for detail); whether a defaulter (undergoing light punishment); with blank columns for the medical officer's remarks and initials. The report is signed by the orderly non-commissioned officer. It is never in book form, but is always in loose duplicate sheets. It bears upon its back a form used for another purpose. The orderly non-commissioned officer is the one taken by roster who is the executive non-commissioned officer for the time. He is something more than our non-commissioned officer in charge of quarters, and is not quite but very nearly a temporary first sergeant. The detail usually runs for a week. The Color Sergeant (who has nothing to do with the colors) for infantry, and the Troop Sergeant Major for the mounted corps, most nearly but not entirely correspond to our First Sergeant. The sick report is not signed by any officer, and there seems to be no obstacle to any soldier who so desires coming before the medical officer. The regulations speaks of "all men who report themselves sick." They do not expressly provide the manner of going on sick report, but it is substantially as follows: Soon after reveille the company orderly-corporal gives to the company orderly-sergeant the names of those reporting sick and receives from him the sick report, which he gives to the "sick orderly-corporal," a regimental, not a company detail. The reporting sick fall in at the appointed hour with their kits in their valise bags and cleaning bags. They are marched to the inspection room and those who are to be admitted to the hospital are sent back for their bags, unless the inspection is held at the hospital, when all take their bags with them. The medical officer examines the men and all unfit to attend parades or perform ordinary duty are to be removed to the hospital. The medical officer notes the disease if diagnosed, marks hospital for those who need it, makes such remarks as he desires, and signs his initials. If made at an inspection

room, and therefore to be reviewed at the hospital, these entries are in pencil. The regulations forbid any convalescents or sick, except those who immediately after vaccination have light duty assigned them, to remain in quarters. They direct that those who require only trivial dressings or medicines shall be dealt with on the spot, marked "medicine and duty," and returned to barracks. Men temporarily unable to perform all their duties may be recommended for light duty for the day, but at the end of twenty-four hours they will either return to duty or be sent to hospital. Obviously certain conditions, such as blistered feet, boils, temporary ailments medical or surgical, can not be completely disposed of so summarily, but if sent to hospital they might occupy beds required for graver cases. In practice such cases are carried in quarters newly marked each day for several days in succession as "attending," which is the equivalent of "medicine and duty." The medical officer marks "Duty" against the man whom he thinks "reported himself unnecessarily." This does not mean where the man has a reasonable doubt, but where he is malingering. Every man marked simply "duty" receives summary punishment in the company. A man who intentionally aggravates his disease is also punished. This includes more than active interference with his condition. All recruits are instructed, and it is republished as a standing order to each company once in three months, that all soldiers contracting venereal disease are to report themselves sick without delay. Any concealment of venereal, although only for a very short time, is regarded as aggravation and is reported to the commanding officer for punishment. Both copies of the sick report are returned to the sick orderly-corporal, who takes the designated men with their kits, not including their arms, to the hospital. (This regulation as to kits is not universally enforced, some regiments arranging to retain them in their store-room.) One of the sick reports is left at the hospital and the other goes back to the company. The medical officer keeps in the inspection room a rough list of men whom he excuses, and an official diary. This resembles a condensed morning report in our service, and is merely for his convenience. The regulations contemplate no special or daily report of the sick by the medical officer to the commanding

officer. But at some large posts a daily or weekly state [report] of sick is made to the brigade major [Adjutant General of Brigade]. It is in manuscript, copied from the diary. This is necessarily incomplete, and might be compiled more accurately in the regimental orderly rooms; for the medical officer does not know certainly the ultimate disposition of those he has sent to the hospital. At the same time and place the medical officer inspects prisoners before trial or confinement. They are certified as "fit," or are sent to hospital and undergo trial or punishment after discharge therefrom.

Officers' names are not entered on company sick reports, but when an officer is placed on or is taken off the sick list the medical officer reports it direct with as little delay as possible to the regimental commander and to the officer in charge of the station hospital. The medical officer makes no further report in connection with inspection [sick call] than as stated. Cases occurring later are seen by him or by the orderly medical officer, and if necessary these, as well as all too ill to appear at inspection, are taken direct to the hospital, and their names appear on the next morning's sick report, with an explanation of their disposition.

A practical difference between the two services is the failure of the British to account in medical statistics for any sick not in hospital, while in fact there are always some in quarters accounted for on the company reports as "attending," for "medicine and duty," or "detained." These are recognized on the "parade state" [morning report] of the company, which has two headings for sick, viz.: in hospital and in quarters. This enables the commanding officer to know the exact state of his command, while the medical reports are not encumbered with cases of no clinical or other importance, and that diminish only for the moment, if at all, the virtual fighting strength.

Brief observation at one or two stations is insufficient for generalization, but as far as it went I was impressed with the rigor exercised in taking up men as sick. Soldiers that I should not have hesitated to excuse were summarily marked "medicine and duty," and disposed of by a dose of physic in a very bald form or by a dressing. This was done and accepted as a matter of course, with no un-

kindness of manner on the officer's part and no sullenness on the man's. On the other hand, many were taken into hospital that we should have efficiently treated in quarters without disturbing company discipline. The prominent feature of this part of the service is the men's perfect freedom of access to the medical officer, without the intervention of a commanding officer, and the entire dependence upon the medical officer to discriminate between worthy and unworthy applicants. No unprofessional judgment prevents the soldier from presenting himself; but "Duty" without further comment leads the malingerer to prompt punishment.

The medical officer inspects the regimental cells daily, and sees every prisoner confined there. He inspects every regiment or detachment before it leaves a station, to insure the detention of all the sick. He makes a health inspection of the men under his charge once a week for personal cleanliness, for itch, cutaneous or acute disease, ulcers, and ailments indicated by the countenance or skin, as fever, small-pox, scurvy, etc. A man who neglects reporting himself when diseased is to be brought to the notice of the battalion commander. This is enforced when wilful, not ignorant, neglect or concealment is discovered. Upon receiving notice of sudden death out of hospital, of severe accident, or of infectious disease in quarters, he at once reports the fact direct to the commanding officer of the station and to the senior medical officer present.

When troops are under orders for foreign service or to go abroad, the medical officer is furnished with a duplicate nominal roll, which states their age and length of service and has columns for his remarks and for the Principal Medical Officer's. He thoroughly examines each man as to his fitness, and the Principal Medical Officer marks on the roll his decision as to their general fitness. One copy is retained by the Principal Medical Officer and the other goes with the troops. Slight cases of venereal or other ailments, and convalescents likely soon to recover, may be embarked for ordinary but not for active service abroad, and are admitted to the hospital on board for treatment. No ruptured soldier is sent to India. The day after embarkation, except on a coastwise voyage at home, the medical officer inspects for venereal all soldiers except the non-commissioned



officers and the married men, and takes into hospital all cases found. This inspection is repeated seven days later. All cases, however slight, are transferred to their destinations under medical supervision and treatment. (Service with troops on shipboard is omitted.)

Nearly all of these various rules look to the early detection of disease among large bodies of careless men, and to the desirability of landing troops for foreign service in good condition. With reasonably vigilant non-commissioned officers, such extreme care would seem to be superfluous with our ordinary rank and file; but there the prevalence of cutaneous disease (5.6 per cent of all cases at a large station) warrants it.\* In the event of hostilities, it would be the duty of our Medical Directors to recommend, and it would come within the province of our general officers to order, such inspections for troops about to take the field.

Medical attendance is furnished by the medical officer in charge of the troops, or by one specially assigned to the duty, to officers and their families and to the families belonging to such troops who are entitled thereto. The commanding officer supplies the Principal Medical Officer each month with a nominal roll of all persons, including civilian servants, not enlisted soldiers or members of their families, with the rank or occupation and address of each who claims attendance. An officer is entitled to medical attendance only when a medical officer or private practitioner has been assigned to such duty and when the officer resides within a mile of the hospital or of some officially designated point. But officers injured on duty may, with the assent of the Director General, recover reasonable medical expenses should a medical officer not be available. Officers may be admitted to any hospital where their accommodation is authorized, for wounds in action or illness in the field. Those sick under other conditions are admitted only when a board of medical officers recommends, and are then charged regulation stoppages. Officers' wives and children are only entitled to attendance when the officers they depend on are serving as first stated.

At large stations the medical officer specially assigned to the

\*In 1889 there were 26.5 admissions for scabies per 1,000 of mean strength in the British army, against .87 in that of the United States.

care of families has a separate inspection room. Officers' civilian servants, kept as such within the maximum number, are required to attend at the inspection room at fixed hours unless illness prevents, when they will be visited at their masters' residences if within the mile limit. Warrant [non-commissioned staff] officers and their wives and children are ordinarily treated in quarters, but may be admitted to appropriate hospitals when absolutely necessary. When these men are absent on duty, their families are entitled to attendance if within the mile limit. Obstetrical attention can not be claimed for the wives of officers or soldiers, unless the latter are taken in hospital, if civil care can be obtained, except assistance in case of danger is requested. The wives of the men on the married roll and their children under the age of fourteen who reside within the mile radius, whether the soldiers are present or absent on duty, receive attendance when a medical officer or private practitioner is assigned. The women and children attend at the inspection room unless unable to do so, when they are visited. The necessary medicines and appliances that are allowed all the foregoing are procured from the hospital on specific prescriptions, at such hours as may be fixed that will not interfere with the working of the hospital, and they are furnished at other hours only in emergency. Medical officers are at liberty to attend the families of married soldiers not on the married establishment and to supply them with public medicines at the discretion of the Principal Medical Officer. According to my observation such voluntary attendance, although a very great tax on their time and patience, is freely rendered and much appreciated.

At the larger posts there are hospitals for cases of parturition and general diseases among soldiers' families, but the limits of this abridgment will prevent a detailed account.

The requirement for officers to reside within a mile of a fixed point in order to receive medical attendance, depends upon the custom that not only permits but necessitates the extra-mural residence of many married officers. The official allowance of quarters, excepting for seniors and at particular stations, does not contemplate the most of the officers being domiciled with families within

the lines. There are however many exceptions to this exterior residence.

It will be noticed that the other conditions under which officers receive attendance are narrower than with us, and are arranged to check public expenditure. The principle by which the individual rather than the government bears charges that we regard incidental to the public service, receives constant illustration in the British methods.

It is not within the scope of my instructions to discuss the married roll and its apparent influence. But I may say that that of the British army, judged by any ordinary measure of a combatant force, is enormous, and thus draws deeply on the medical as well as on other resources of the establishment. In some instances the soldiers' families are quartered on the barrack square, with the outhouses for women and children side by side with those for men; in others they are in rear of but always near the company lines. In the better posts they do not form a distinct cantonment of their own. Exact sanitary discipline is exercised to keep these people in reasonable health, and, as noted, daily medical inspection [sick call] is held at a fixed hour, which is attended by all the indisposed able to leave the house. To prevent hardship, an orderly medical officer [officer of the day] is available for emergencies.

#### SANITARY DUTIES.

The medical officer charged with sanitary duties, or should there be no such officer then the one in charge of troops, is required to carry out these particularly described duties: To visit and advise as to gymnastic exercises; to examine the food and drink vended at the canteen; to determine whether the cooking is sufficiently varied; to ascertain the quality and amount of the drinking water; to inspect monthly, under the direction of the commanding officer, all filters used in barracks, and to report to him their condition; to ascertain that the cubic space per man is not less than 600 ft. in barracks, and 400 ft. in huts, and that the number of men in occupation is noted on the proper form. He must satisfy himself that every barrack guard room and cell is suitably lighted and is suffi-

ciently ventilated to keep the air pure by night as well as by day; that married soldiers' quarters, schools, reading room, kitchens, wash-houses, lavatories, urinals and latrines are suitably ventilated and lighted; that beds and bedding are exposed to the air and the walls and ceilings are limewashed as the regulations require. When troops are billeted he ascertains by visits that the men's quarters are warm, ventilated and not overcrowded, and that their bedding is clean and dry. He is required to visit every portion of the barracks at least once a week, to examine their general sanitary condition and cleanliness. He notes in his sanitary diary such examinations, the defects discovered, the representations made to the commanding officer, and the result of the representation. He recommends to the commanding officer, orally or in writing, whatever he may consider necessary to protect the health of the troops, whether as regards the abatement or removal of local causes of disease or as to any alteration of diet, clothing, drills or duties. He also recommends the precautions he thinks necessary on the appearance of epidemic disease among the troops or neighboring civilians.

The medical officer transmits to the Principal Medical Officer [Medical Director] copies of all written recommendations made to the commanding officer; and, should he forward sanitary suggestions to the Principal Medical Officer, he furnishes a copy to the officer commanding the troops. In addition, he makes a special written report when disease unusual in amount or infectious in nature appears among the troops or families in his care. This is sent to the commanding officer, and a copy to the Principal Medical Officer, through the officer in charge of the station hospital [Post Surgeon], who records it in his remarks on the Weekly Return of Sick.

Every medical officer in charge of troops, a military prison, or a military school, furnishes to the Principal Medical Officer a Quarterly Sanitary Report on a form, accompanied by a Distribution Return also on a form. The first specifies the regiment, its barracks and station, gives its average strength, its average daily sick, its total hospital admissions and its deaths during the quarter, and the number in hospital on the last Friday of the quarter. These facts are followed by thirteen summaries of the sanitary subjects just enumerated



under appropriate headings, and a note of the amount of the hospital accommodation.

The Distribution Return gives the names of each barracks and of the corps occupying it, the average strength and estimated accommodations in each barrack, the admissions during the quarter of all diseases, of enteric fever and of all other fevers separately, of dysentery and diarrhoea together, the number in hospital on the last Friday in the quarter, the hospital in which treated and the accommodation in each hospital, with remarks.

The medical officer in charge of the troops makes annually to the officer in charge of the station hospital a manuscript report upon the improvements that have occurred during the year as to cubic space and ventilation in quarters, facilities for ablution, extended means for variety in cooking, alterations in diet, changes in clothing having reference to climate and season, improved drainage, and the influence of gymnasia upon the health of the troops. The regulations supply for the assistance of the medical officer a copious and convenient outline of the particulars of such reports. When relieved from duty with troops, a medical officer is supposed to supply his successor with this report completed to that date. The reports are attached to the annual return of the hospital. The materials for them are the weekly observations in the sanitary diary.

The Sanitary Diary and our Medical History of the Post are analogues, except that in the diary the entries are made more frequently and it is an individual more than a station record. There is no substantial difference in the kind of sanitary report required in the two services. In the British service, however, there is no formal provision by which the views of the commanding officer are made known to the medical officer; and, as will appear in other instances, the commanding officer is not a channel of communication to the Principal Medical Officer. Both officers, however, are furnished with the same material. In this field, as in most others, their regulations enter into very minute directions, which with us are left as the natural inference from general instructions. The chief advantage of this is that no other branch of the service can look upon a zealous medical officer as intruding, and no medical officer

can find apology for not covering the whole domain of prevention.

A medical officer having charge of troops, sanitary duties, or attendance on officers and families, furnishes the medical officer in charge of the station hospital, not later than Friday afternoon of each week, with all the details pertaining to those duties required to complete the **Weekly Return of Sick**.

### HOSPITALS AND HOSPITAL SERVICE.

Hospitals are either Station or General. A Station Hospital is the exact equivalent of our post hospital in its purpose, in contradistinction to the regimental hospital that at one time prevailed and that is still found in a modified degree with the Guards. Its administration requires a medical officer in charge, and, according to its size, attached medical officers, a quartermaster, one or more warrant and non-commissioned officers and privates of the Medical Staff Corps.

A General Hospital receives the sick sent from abroad technically known as "invalids," the local sick, and others entitled. Its staff differs from that of a station hospital chiefly in being more numerous. The officer in charge is known as the Principal Medical Officer and comes from the administrative group. An officer is especially detailed as his Secretary, or as we would say, Executive Officer, and is known as the Registrar, and medical officers are directly in charge of divisions. Each General Hospital has a Lady Superintendent and a staff of nursing sisters. The larger station hospitals also may have a staff of nursing sisters.

The Quartermaster, as will be explained elsewhere, is an officer with honorary rank appointed from the staff sergeants. His general duties are those of the custody of all kinds of hospital property, and his position is similar to that of a Medical Storekeeper, assuming one were attached to a hospital, with certain military duties added. When none is attached, the quartermaster's duty is divided between the wardmaster and the steward.

The Wardmaster is invariably the senior warrant or non-commissioned officer. He is a sergeant of some grade, and corresponds to our executive or senior steward. The title is that of an office and

not of a grade, and the office closely resembles that of sergeant-major. We copy the title in speaking of privates as wardmasters (A. R. 1578), but a private can not discharge these functions. The Compounder of Medicine corresponds to our Dispensing Steward, and may be the wardmaster himself or some non-commissioned officer acting under him. The Steward is a non-commissioned officer discharging under the quartermaster such duties as the medical officer in charge may direct, especially in relation to property, and corresponds somewhat to our Quartermaster-Sergeant. All these men are sergeants and are spoken to as such, but with reference to their duties they are spoken of as the Wardmaster, the Steward, etc.

Station [Post] Hospitals.—These are subject to the authority of the commanding officer, but their internal administration is under the medical officer in charge subject to the control and supervision of the Principal Medical Officer, who thus has a more direct power than our Medical Director.

No hospital structure is built or equipped by the Medical Department, and the medical officer in charge acts only as the custodian of the property for other branches of the service. The buildings, fixtures and enclosures belong to the Royal Engineers, and the contents, except the surgical appliances, medicines and records, belong to the Ordnance and the Army Service Corps as represented by the officer in charge of barracks. This ownership includes even such articles of ward furniture as bed-panes and medicine mugs. Every room, whatever its character, has its specified equipment, of which an inventory is posted therein. These lists depend upon schedules in the regulations, and knowing in advance the use to which any particular apartment is put, one can tell just what property should be found there. Careful responsibility is exacted of the soldier in immediate charge of the room for all its contents. Frequent inspections verify the articles, and a money stoppage is made for all damage not manifestly fair wear and tear. This stoppage is assessed against the person losing or breaking the article, if he can be identified; otherwise, against the soldier in charge of the apartment, or, should he positively disprove his connection with the loss, against

the corps at large who are in the room or building. This system prevails in relation to all buildings and their contents, and to other public property in the service.

The minimum hospital establishment is one non-commissioned officer as wardmaster, steward and compounder, one private as cook, and one private as ward orderly, when the sick are fifteen or less, and one for every additional ten patients. The allowance is so meagre because there is specific authority for the employment without pay of such patients as may be able for light hospital duty. One attendant may be employed as gardener when necessary. Comparatively little exterior police is required, as the most of the rough work is done by a contractor. Additional attendants are obtained from the Medical Staff Corps, if available, through the Principal Medical Officer. If such are not available and the Principal Medical Officer approve, the commanding officer may be asked for a temporary orderly from the troops. Only in case of emergency may the commanding officer be first applied to. No extra pay is allowed these men unless their employment is sanctioned by the Principal Medical Officer and approved by the Director General. Such untrained men may never have charge of the seriously ill, and they must be sent back as soon as they can be spared. This possible assistance by the line, whose necessity has been shown by experience, although debarred our Medical Department by law, is specifically permitted by their regulations. Under severe stress there can be no doubt the higher law of our necessity will override the statute.

#### HOSPITAL ADMINISTRATION.

The medical officer in charge is responsible for all its duties and is the accounting officer to the other corps for its buildings, equipment, stores and supplies. The quartermaster, or in his absence the non-commissioned officer who is the steward, is responsible to the medical officer for their care and custody and for all the other public property except the records. On questions referring purely to stores or equipments, the medical officer corresponds directly with the officer in charge of barracks (comparable to our quartermaster). He inspects monthly or oftener all equipment or



stores as to their condition and to verify inventories; at the end of the month he examines the steward's stores and books, checks the consumable balances and utilizes the accumulation. In the absence of a Royal Engineer, or where delay would be detrimental, he orders repairs by the contractor or other civilian, and notifies the engineer officer. He supervises all the sick in the hospital and the expenditure of all medicines, diets and extras, and he divides the professional duties between himself and the other medical officers, retaining for himself a proportional number of cases unless excused by the Director-General. All soldiers proposed for invaliding (that is, for discharge for disability, or for transfer to England as invalids) are placed in his care. He refers to the Principal Medical Officer all matters he can not decide as to the care of the sick or the management of the hospital. He is required to visit the hospital at home stations at 9 a. m. in summer and 10 a. m. in winter, between 5 and 8 p. m., and oftener when necessary. Abroad as the climate may indicate.

#### ATTACHED MEDICAL OFFICERS.

They are responsible to the medical officer in charge for the professional care and the military discipline of the wards that he has assigned to them. They draw his attention to all serious and important cases and to the patients they think fit for duty. They report by certificate changes in diagnosis, carefully instruct the ward orderlies in hospital duties, and attend such drills and parades of the Medical Staff Corps as ordered. Each ward officer keeps a Diary or Ward Book and a Medical Case Book. The Ward Book contains all the prescriptions legibly written, with specific directions in English for their administration. In the Case Book are entered the medical particulars, from notes taken in the ward, of all important cases. Neither book may be left in the ward nor be accessible to the patients. The medical officer signs the first and last entries, and on transferring a case he also states to whom and when it is transferred. All extras and diet drinks are entered in the Case Book with the daily amount and the reason for the issue, for the information of the officer in charge.

### ORDERLY MEDICAL OFFICER [Medical Officer of the Day].

One of the attached officers is ordinarily detailed by roster. He is on duty for twenty-four hours, and remains at his post until relieved by his successor, except when absent on duty or at his meals, when he leaves written directions as to where he may be found. He inspects the stores received, sees that the food is properly cooked, inspects the kitchen after the evening meal, makes regular rounds of all the wards, investigates reports and complaints, inspects the medical staff corps barrack rooms in the morning, receives the report of the detachment at tattoo, inspects men discharged or "detained" before they leave the hospital, and performs all necessary and emergency duty toward the sick in the absence of the officers in immediate charge.

### ADMISSION AND DISCHARGE [RETURN TO DUTY] OF MEN.

All soldiers marked for hospital at medical inspection are conducted thither, bearing their kits, by the Sick Orderly Non-Commissioned Officer, who takes with him the duplicate company sick reports. As soon as possible the medical officer in charge examines these men, definitely determines their diseases, and assigns them to wards either actually or through the wardmaster. At the larger stations the double examination and the greater number of men considerably delay their final disposition. At the smaller stations, where the medical inspection occurs at the hospital, as our own sick call, the process is simplified and shortened. The station medical officer [post surgeon] may think that a man does not require admission to hospital, when he may return him to his company at once; or he may believe that he requires a day's rest and excuse from duty, or that a few hours' observation is necessary, so in either case he is "detained"; or that he should be immediately "admitted." Whatever decision is reached is noted accordingly in ink on both sick reports. One sick report is sent back to the corps with the non-commissioned officer, either at once or at noon as the size of the command determines, and the other is retained as an office record. The "detained" men are again examined in the evening, and should their admission be thought necessary the officer commanding their corps

is immediately notified in writing, and they are placed on hospital diet the next day. Should they be found not sick, they are returned with the discharged men.

Upon admission the soldier's kit, including his entire uniform (except the forage cap of warrant [non-commissioned staff] officers only) is taken in charge by the Pack-Store [Knapsack Room] Keeper, who must be a non-commissioned officer, and the items are formally entered in a check book. The keeper makes duplicate inventories of every article, and indicates by a letter whether it is New, Good, Worn or Bad. The duplicate is signed by the keeper and endorsed by the patient, or by the ward orderly for him, and the number of the check is attached to the kit. All valuables are turned over to the Quartermaster. The keeper selects out the soiled linen and has it washed at public expense. He brushes and cleans the various kits, and properly arranges and cares for them while the men are in hospital. When they go out, they present the duplicate and sign the counter-foil.

On admission the patient is given a bath if possible, and the following articles, known as his personal equipment in hospital, are issued to him, and he is held responsible for their condition: One pillow-case and two sheets, and one each of the following: Quart soup basin (bowl), board for bed-head ticket, bread crock (covered earthen jar), hair-brush, comb, fork, knife, pint earthen drinking mug, plate, butter pot, chamber pot, tablespoon, towel, and cap, gown of blue serge, cotton handkerchief, cotton shirt, flannel shirts as needed, pair socks, pair slippers, blue serge trousers, blue serge waistcoat (jacket), and if necessary, one small basin for sores, earthen cup for spitting, ophthalmic napkin, urinal, and chevrons. While in hospital the men are required to wear the uniform just noted, which is a conspicuous and ill-fitting bright blue with a scarlet neck-tie. It is a very vivid dress and effectually prevents straying from the grounds unobserved. The non-commissioned officers are given red chevrons. While confined to bed these are placed over the bed-ticket. These articles are receipted for by each man, or by the ward orderly if he is too ill, and they must be returned in good condition on his departure.

When regularly taken on the books as "admitted," usually the next morning, the man is required to go to bed regardless of the character of his disability. This is not a regulation but at certain large hospitals it is a rule having the same force, and it may be looked upon as a custom of the service. He is also then placed on milk diet, which consists of 12 ozs. bread, 3 pts. milk, 2 ozs. rice, 1 oz. sugar per diem. Immediately upon assignment to a bed each patient has a diet sheet on a board hung over the bed's head. All diets, extras, or drinks are entered on this sheet by the prescribing medical officer previous to their actual issue. Ordinary diets are entered for the succeeding day, but extras and drinks for the day of issue.

But soda water, lemonade and calves-foot jelly, before they can be issued require the approval of the officer in charge. This is true of general hospitals as well, where the division officers also must approve, and it is a curious illustration of the minor economies that frequently produce neutralizing delay. The first issue of a diet is written in full, and subsequent issues of the same diet are marked by its initial; all columns in which no entries have been made have lines drawn through them; the quantities of extras must be written, not entered in figures, and all alterations must be initialed.

The date of discharge (to duty) must be filled in by the prescribing officer, who also signs the sheet when it is completed. The extras are also entered in the case book for the information of the Principal Medical Officer. The prescribing officer is directly responsible for and may be called upon to justify the necessity for all the articles ordered. The medical officers specify on the diet sheets the hours during which the patients are allowed out of bed, and also whether they may be employed on light hospital duty.

#### DISCHARGE [RETURN TO DUTY] FROM HOSPITAL.

At each morning visit the officers designate the men fit for duty the next day. These are then inspected by the medical officer in charge, and if passed by him their names are entered on the back of the company sick reports, where there is a form for the purpose, which is returned to the company, usually at noon. The next day these men cleanse the utensils and the bedsteads they have used,



turn in their personal hospital equipment, and receive back their regimental clothing and kit. They are conducted to their commands after the evening meal by an orderly non-commissioned officer from the regiment.

The hospital admissions and demissions as just described are marked with a deliberation that at first view appears needless and that certainly presents nothing for our imitation. The celerity of the original inspection is counterbalanced by the second examination, which is superfluous if the first is meant for more than a rough indication; and the conditions of "detention" and "attending" are the equivalents of our quarters, with somewhat greater inconvenience to all concerned and without the soldier appearing on the permanent medical records either nominally or numerically. The soldier upon his return from hospital passes at once to a status of duty with no intervening convalescence or probation in quarters. There must be no doubt of his recovery, so the second day is in part one of observation. The real key to the whole system is the importance of keeping the hospital and the company ration accounts distinct and unbroken. With no interchangeable ration system like our own, and with stoppage charges to be carefully accounted for at every turn, the actual ration in kind is sent to the hospital from the company for the first day and the Medical Department becomes responsible for the soldier's subsistence only on the second day of his residence, which officially is the first of his admission. The clinical and the pecuniary records are thus made to correspond. In the field, as will be seen later, the whole matter is greatly simplified.

#### HOSPITAL EQUIPMENT.

The ward equipment is specifically arranged by an official and unvarying schedule, that can not be detailed in this abridgment. It contains some articles in character and number hardly to be anticipated from our customs. For instance, a ward of between 20 and 30 beds has shaving-brushes, shaving-bowls, and shoe-brushes, two each; it has two wash-basins, six tumblers, two arm-chairs, but no common chairs. The ordinary seats are "forms," very heavy wooden benches with iron legs and no backs. A ward of this size has three

"soldiers' tables." These are of very heavy plank on trestles, and are used indifferently to hold medicines or dressings, or for meals. The bedsteads usually have a sacking bottom. The bedside tables are of various patterns: one excellent kind has a heavy glass or marble top with a shelf beneath. Two "loading irons" are supplied each ward. These are heavy iron weights arranged to pass over the handle of a long-handled scrubbing-brush, so as to increase the pressure and facilitate the work. This is an admirable device.

It is to be remembered that none of the ward furniture, not even a glass measure nor a pewter egg-cup, is medical property. It is receipted for by the hospital quartermaster, on behalf of the senior medical officer, who is the accounting officer, to the officer in charge of barracks. An abstract of inventories is signed by both of these officers and a copy is retained by each, and the officer in actual custody may have a triplicate if he desires it.

The inventory for each ward is hung up in it, signed by the officer in charge of barracks. Should it be absolutely necessary to alter the number of articles in any particular room he is to have due notice, that he may change the inventory. No one else may alter it.

A dining room, used only for dinner, is found in a few of the larger hospitals. In these breakfast and supper and in others all the meals are eaten in the ward at the tables just described or in bed, as the case may be. The ward orderlies bring the food from the kitchen and cleanse the utensils afterward. When patients go to the dining room they carry with them their plates, bowls and other table furniture. The daily bread allowance is issued individually and is supposed to be preserved in the crocks. As it dries there, it is usually kept elsewhere, and I have observed the day's issues for a ward lying in it in a tray covered by a towel. To supply each soldier with his day's allowance of bread seems inconvenient and wasteful; for while the average quantity may be sufficient, the supply and the appetite are not always in accord. It is a part of the method of individual instead of general allowance and charge.

#### AIR-SPACE.

The minimum cubic space for each bed in permanent hospitals is 1,200 feet at home or at temperate stations. For detached wooden

huts (pavillions) 600 cubic feet. The average air-space for each man for each month in the year is to be reported.

#### EXPENSES OF PATIENTS.

More than twenty classes or conditions of patients are recognized in the regulations, and against the most of them stoppages varying in amount are made. It is sufficient here to say that all soldiers in hospital on account of wounds received in action or illness contracted in the field, are treated free. In general terms all other soldiers undergo a stoppage of 7d a day to cover their hospital expenses. Those under treatment for sickness resulting from their own offences lose their entire pay. Delirium tremens and venereal diseases are not regarded as the result of offences, in this sense. Soldiers admitted for injuries received in the line of duty from circumstances beyond their control, may have their stoppages remitted by the Secretary for War, but if not in the field they fall under the general rule. The medical officer makes out the stoppage returns from the Admission and Discharge Book [Hospital Register] and sends them to the soldier's commanding officer. His acknowledgment of their correctness is pasted on the Diet Account, of which later, with which it must agree. The hospital stoppage includes payment for washing the soiled clothes the soldier brings with him to the hospital and that of the public property he uses there. The personal clothing is usually washed by a company woman, and the hospital clothing and bedding by the contractor. The Army Service Corps pays for the whole. The man has no direct personal responsibility, and there is nothing corresponding to our Hospital Matrons. No patient is allowed to receive pay while in hospital, nor to retain money or other valuables in his possession. The man's accumulated pay is given to him on rejoining his company, and his valuables are returned to him by the quartermaster on leaving the hospital. But at stated intervals, generally weekly, the men are supplied from the company with small amounts of tobacco, stationery and postage stamps, should their use be permitted by the medical officer. These are charged against the pay that is accumulating for them while sick.

### CONFINEMENT.

At the larger posts are wards for sick soldiers awaiting trial and for those not controllable by ordinary hospital methods, which are under charge of a detachment of the guard, not of the medical staff corps. The guard is responsible for their custody, while the medical officer is responsible for their treatment. The larger hospitals contain apartments constructed for the proper keeping of violent lunatics. In the absence of such rooms the only restraint permitted is by the strait waistcoat, belt or sheet, in order to prevent injury.

### ADMISSION FOR INJURY.

Whenever a soldier is admitted to hospital for an injury, whether received on or off duty, except wounds in action, the medical officer at once notifies the man's corps [regimental] commander who convenes a Court of Inquiry to investigate the circumstances. The court gives no opinion, but the soldier's commanding officer records his opinion on the evidence. The proceedings are sent to the commanding general for confirmation, and are transmitted to the medical officer to note on "the man's medical history sheet the fact that the court has been held, and the opinion as to the effect of the injury on the man's service. Finally the proceedings will be attached to the man's original attestation [enlistment paper], a copy being attached to the duplicate." (Q. R. I. VI. 122.) The probable object of this care is to settle beyond doubt at the time of its occurrence the conditions that led to the injury.

It is interesting to note in passing that, while any commanding officer may assemble a Court of Inquiry to assist him in reaching a conclusion, no court may give an opinion on any point involving the conduct of an officer or a soldier. (Q. R. I. VI. 118.)

### DANGEROUS AND FATAL CASES.

When a patient in hospital becomes dangerously ill, or a fatal result is apprehended, the medical officer in charge at once sends full particulars to the commanding officer of the man's corps, that his friends may be communicated with without delay. He also informs the Chaplain of the man's denomination. Immediately after the death of a soldier the commanding officer causes a report of the cir-



cumstances to be made to the man's next of kin, as shown in his Pocket Ledger, which is required to be duly corrected every first of January. This humane and reasonable course is directly opposed to our own practice, and is highly commendable. To balance a possible pension claim against the relief that such information gives to those in distress is inhuman; and to suppose that a full statement of the truth when the facts are fresh will assist or tempt to fraudulent claims is short-sighted and narrow. Further, if there is a probable claim, it should be the duty of the Government to supply such facts in support of it as may be exclusively in its own possession. It would appear more logical that the information in relation to illness and death in hospital should be supplied directly by the Medical Department, rather than at second hand by the regimental commander.

#### DEATHS.

The death of a man in hospital is at once reported to the commander of his corps and of the station, with a notice of the date and hour after which the interment may occur. The general or other commanding officer is required at once to communicate the fullest particulars of an officer's death to his nearest relation, and to follow the same course should a fatal result to his illness be apprehended.

#### SUBSISTENCE IN HOSPITAL.

The soldier's ration for the first day is carried with him or is sent after him from the company, uncooked if possible, and only in an emergency is he supplied from the hospital on that day. Should it be necessary, however, parts of certain specified "extras" may be issued to him. For this special purpose bread, which is not an extra, is thus regarded. After this first day the patient is placed "on diet," as it is technically known. To be "on diet" does not mean, as one might suppose, to be "dieted" in the professional sense, although the condition is much the same, but to be fed at the hospital expense. For the sake of perspicuity, although anticipating what must be repeated in another section, it is to be noted that the soldier's ration when with the company in the United Kingdom, as supplied by the Government, is one pound of bread and three-fourths of a pound of uncooked meat. All in addition, as groceries and vegetables, are purchased at the

expense of the soldier himself by a formal stoppage against his nominal pay. For patients in hospital no rations as such are drawn regularly, but food is supplied according to various "diets," for which a uniform stoppage is made against each patient to cover the entire hospital expenses of all. Diets, as standards by which selected food may be distributed to groups of sick or convalescents, are a device probably common to all hospitals, civil and military. The British army uses seven, known as Tea, Milk, Beef-Tea, Chicken, Convalescent, Roast, and Varied. Each is formulated with exactness, and parts of two diets may not be ordered together. The Tea Diet is: Bread 12 oz., Tea 1-2 oz., Sugar 2 1-2 oz., Milk 6 oz. The Varied Diet is: Beef or Mutton, 12 oz. without, or 15 oz. with bone, Bread 18 oz., Tea 1-2 oz., Sugar 1 1-2 oz., Milk 6 oz., Butter 1 oz., Potatoes 16 oz., Vegetables, 4 oz., with salt, pepper and mustard, and optionally wine, spirits, malt liquors, and diet drinks may be ordered. These diets represent the extremities of the scale through which the others run. The ordinary drinks allowed for patients are: Barley Water, Rice Water, Gruel, and Lemonade, each prepared by formula. The regulations take cognizance of "extras" and "medical comforts," whose exact definition is difficult. Extras may be described as articles of food and stimulant authorized by the Allowance Regulations to be given under certain conditions in addition to the recognized hospital diets. Medical comforts are articles of similar character procured and used somewhat differently. The same article may be a part of the regular diet, an extra, or a medical comfort, according to the circumstances of the case. As a class, the medical comforts closely resemble our hospital stores. It has been suggested that the medical comforts are relics of the regimental hospital system, as illustrated by the boxes of them shipped to hospitals on active service.

The system of food supply and accountability will be described later.

This subject of feeding the sick is so important that I introduce for the convenient comparison of our own officers an abstract of the official scale promulgated for our guidance. In the United States military hospitals the sick have either Full Diet or such articles of Special Diet as the medical officer may in his discretion select. The

Full Diet schedule prepares a bill of fare for every day in the week, that insures abundance and variety. The week's range covers twenty-seven articles for whose preparation recipes are given, besides bread and cheese, and the amount supplied one day with another is the same, although the items vary. To take Thursday as an example, the list is: Breakfast, Coffee or Tea, Bread, wheat or corn, Hominy with gravy, Bacon, fried; Dinner, Beef or Mutton roast, Bread, Potatoes, Vegetables, canned or fresh; Supper, Tea, Milk-toast, cold meat, stewed fruit. The quantities of these are, for twelve men, Coffee, roasted, 12 oz., with milk and sugar to taste; Hominy, 16 oz., Bacon 3 lbs., Beef or Mutton, 16 lbs., Potatoes, 8 lbs., Milk-toast, bread 4 lbs., milk 3 pts., Butter 3 oz., Stewed fruit, dried fruit 18 oz., Sugar 3 oz., Vegetables and cold meat, no formal limit. Special Diet embraces too long a catalogue to enumerate. The separate items or any combination of them may be selected. A few examples will illustrate: For twelve men, beefsteak, 6 lbs., Stewed oysters, 1 qt., milk, 1 qt.; Broiled ham, 4 lbs., Mutton broth, mutton 6 lbs., salt, rice, each 2 oz.; Macaroni, 1 lb., etc., etc. The money value of such parts of the soldier's ration as the medical officer does not choose to use in kind serves, with us, to procure the other articles, which are supplemented by a few "hospital stores" that nearly accord with the "medical comforts." The medical officer draws the rations from the Subsistence Department, disposes to the government or elsewhere the parts not needed, uses the cash proceeds to purchase other food, and takes up the whole on a debit and credit account for the hospital as a unit, with no reference to the individual soldier. In the British service each man must have an individual account kept with him, and the accounting officer, not of the Medical Department, verifies by a minute scrutiny of each diet ordered the accuracy of the whole.

#### HOSPITAL BOOKS AND PAPERS.

A soldier appears on the hospital books from the date of his formal admission, usually the morning after his actual arrival, so that the ration returns and the other records may correspond in time. The wardmaster is in charge of the Admission and Discharge Book, which corresponds to our Register, and makes in it entries as follows:

Number of the case; (the numbers are continuous for the calendar year, a new No. 1 appearing every January); Regiment; Company; Regimental number; (as explained elsewhere, the regimental number is the soldier's permanent numerical designation); Rank and Name, surname first, and station whence he came, (should he be married M is written under the name); Completed years of age (at last birthday) and of service; Dates of admission and discharge from hospital; Disease, (primary, secondary and operation); Died or recovered (in case of death DIED is written in capitals and enclosed by a black line. R is used for recovered); when discharged from hospital; the state of health (healthy or otherwise), and destination; the ward in which treated; observations (in all instances the No. and folio of the Case Book). Then follow twelve columns under the general heading of number of days liable for hospital stoppages, grouped into three sets of four months each, in which to note for the first, second, third and fourth months the number of days' ordinary stoppages, stoppage of whole pay under certain conditions, and for medical comforts; and a final column of the total number of days on diet or receiving extras. All referring to the pecuniary relations of the soldier to the service has no interest for us, except abstractly. An interchangeable ration would abolish the whole of it. Our column for "disposition" would embrace the four following "disease." I am not sure whether an index is required. Separate Admission and Discharge Books or parts thereof are kept for Regular troops, Auxiliaries and Pensioners, Seamen and Marines. Officers, and Women and Children, and spaces are left between the yearly records.

#### HOSPITAL PAPERS RELATING TO AND ACCOUNTING FOR FOOD.

The senior medical officer obtains all his diets, extras and comforts on requisition forms from the Supply Officer (Army Service Corps) or directly from the contractor. After the ward officers enter the diets for the next day, the wardmaster collects the sheets and sends them to the steward who prepares a Diet Account. This is a duplicate paper, of which one copy is in greater detail than the other. On the store copy, retained as a hospital record, the steward enters day by day the number and description of all diets ordered.



All food supplies received and issued are also entered on it, and one of its objects is to enable the provision accounts to be verified at any moment. It consists of twelve folio sheets arranged so that each article may balance as well as the totals, and showing not only the diets ordered but the stoppages on their account under six headings for each company, with three for free diets. The stoppage entries occupy the first page at the rate of a line to each company or detachment, and the receipts and issues and their abstract take up the remainder of the form. On the other, or War Office copy, the total but not the daily receipts and issues are entered at the end of each month, or more frequently if desired. When the daily diets have been entered, the steward prepares a Provision Ticket, and gives it and the Store or Hospital copy of the Diet Account and the Diet Sheets to the wardmaster. The Provision Ticket embraces all the diets for each ward, and by it the wardmaster checks the diets and extras that have been entered on the Diet Account. The next day he presents the Diet Account to the medical officer in charge, for his signature to the totals of food issued. This signature is a daily verification of the issues of the preceding day, and to be absolute the signing officer must examine each day the diet sheet of every patient, a process of much time and labor that I have observed carried out. As soon as the Diet Account has been checked, the wardmaster gives to the cook the Provision Ticket, which is at once authority for him to receive the supplies and the guide for the proper distribution of the diets. But the wardmaster and not the cook receives from the store-room the wine, spirits, and malt liquors ordered. He gives these to the Nursing Sisters, or in their absence becomes himself responsible for their proper distribution. The cook presents the Provision Ticket at the Provision Store (an apartment within the hospital), weighs the articles in the presence of the issuer and of one or two patients, and enters the quantities on a slate. At the end of each month the medical officer in charge forwards the original diet sheets and the Return of Extras to the Principal Medical Officer. In no instance, notwithstanding the original may be defaced, may copies be sent. Having examined these diet and extra diet sheets, the Principal Medical Officer transmits them to the Officer in Charge of

Supplies for that District. At the same time the War Office copy of the Diet Account, having been filled and certified by the medical officer at the end of the month as correct, is transmitted by him to the Supply Officer. As the various requisitions are already in that officer's hands, he then compares the three sets and the contractor's bills, and certifies to the correctness of the computation, and to their agreement with the contractor's bills and with each other. and the account goes forward to the War Office.

Under this system food in bulk is easily obtained for the hospital, but no more easily than by our own way. The method of accountability is so difficult, in the absence of a supply of elaborate blanks, and under any circumstances is so complicated and troublesome, as to offer nothing for our imitation.

#### MEDICAL HISTORY SHEET.

This is a paper prepared for each man at the time of his enlistment and arranged thus: Upon one side are the man's surname and Christian name; the date and place of enlistment; the parish and county of birth; age at last birthday; former trade; height; weight; chest measurement; physical development; small-pox marks; vaccination marks (arm and number); when vaccinated; and marks on body; the name of the medical officer who finally approved the recruit; date of examination and condition for re-engagement (for a medical officer's future signature); particulars of re-vaccination (for signature); the corps, regimental number and date on first assignment and on transfer; place, date, disease and result when he may have appeared before a medical board; and a space for general remarks as to habits, conduct, etc. In other words this is a descriptive list giving more particulars than ours, with no account of pay or clothing. The reverse of the form also carries the man's name and is ruled in thirteen perpendicular columns and twenty transverse lines for as many entries under these headings; station or troopship; date of arrival at the station or of embarkation; date of attack; dates of hospital admission and discharge, with year, month and day of each; diseases, primary and secondary; number of days in hospital, and remarks on the nature of the disease, how induced, mild or severe,

if completely recovered from, whether any particular treatment was adopted, nature of primary disease in venereal cases and whether mercury had been given, and if an accident whether it occurred on duty; and signature for each line of entries. The available space is so meagre that the barest facts only can be given, and not the particulars implied by the later headings.

These medical histories are regimental, not company papers, and are sent by the man's commanding officer to the hospital at which he would be treated immediately upon the arrival of a command at a station. The medical officer in charge of the hospital (not the man's commanding officer) sees that entries of station and date of arrival are at once made on the sheets. He also sees that every admission is immediately entered from the Admission and Discharge Book and is completed upon the termination of the case, that should the soldier not have been in hospital while at a station "no admission" is entered and duly signed, and when a command leaves a station all the sheets fully completed are returned to the commanding officer for transmission to the next hospital. While at any hospital these sheets are open for the inspection of the medical officer serving with the troops. For men "non-effective by death" he forwards the completed sheets to the Principal Medical Officer for transmission to the Director General. But for men who become non-effective through discharge, desertion or invaliding, their medical history sheets accompany their other personal documents. In the one case they are useful as vital statistics: in the other, the men surviving, they have a military value.

Our medical officers have often inquired whether such a document might not be introduced among us with advantage. Shorn of some of its descriptive detail, as a purely professional and not a military or regimental paper, transmitted by mail directly from one post surgeon to another, it might be useful to the medical officer at the man's new post. The Hospital Register supplies all the necessary local history. But as our enlistments are not necessarily continuous, and frequently follow in different organizations, its greatest value, that of a record of previous service and health, would be lost. It is conceivable that by using the Surgeon General's office in connec-

tion with the outline-card records as a clearing house, such histories might follow the men to their new commands. I do not think, in view of the clerical labor required, that the result would be commensurate with the energy expended. A medical history in the sense of a clinical abstract, to accompany a transferred patient, is quite different. But in the British service, ranging all over the world and with an enlistment practically continuous, the medical history sheet promptly supplies information often otherwise unattainable. Our careful records, concentrated at Washington, furnish every particular required there for vital statistics and for pensions.

Transfers from one hospital to another are made on formal medical certificates, corresponding to our transfer slips.

A Register of Deaths, to include all in or out of hospital, is kept at each hospital. It supplies information for the annual return. Our Necrological Record differs from that in being chiefly of value as a record to verify interments. There are other formal records relating to supplies, charges, and property accountability unnecessary to describe.

The methods of correspondence will be discussed later.

## HOSPITAL REPORTS, RETURNS AND STATISTICS.

### *Morning State.*

A Morning State of Sick [Hospital Morning Report] is furnished every day to the commanding officer, direct or through the Principal Medical Officer, according to circumstances. This is a brief military report upon a form that is arranged to be available for several uses. It is not contained in a book, but is on a separate piece of paper about the size of a half-page of cap. It gives by corps (corps is usually equivalent to regiment) the number that remained at the last report, since admitted, discharged (that is by return to duty or otherwise), died, and remaining. A space is reserved for sick officers, for their rank, name and corps, disease, when admitted, discharged, and remarks. This form is used as an immediate report to the commanding officer whenever an officer is taken on or off the sick report. I do not understand that these details about officers are entered on the daily states. The lower part of the same blank con-



tains a form for Report of Death, on which every death as it may occur is reported at once to the commanding officer of the corps and of the station. It is ruled for regimental number, rank, name and corps, age, religion, disease, time and place of death, and period after which interment may take place. The back of the paper is used for any purpose where a nominal roll is required for communication between the hospital and the corps, and it is ruled for corps, regimental numbers, rank, names, age, dates of admission and discharge, and remarks. This multiple form is one of general utility, and in its nature is transitory. It is an ephemeral report, not a record. After the information has been noticed the paper itself is not specially preserved. I failed to find any book or permanent record by which the numerical condition of the hospital on any particular day could be determined at once; that is, one corresponding to our Hospital Morning Report.

#### *Weekly Sick Return.*

A Weekly Sick Return is made from every station Hospital at home to the Director General and to the Principal Medical Officer; abroad to the Principal Medical Officer. Abroad, separate returns are made for white and for colonial or black troops. This is a numerical return of all enlisted men, except foreign invalids, treated in hospital or in quarters. Ordinarily, warrant officers are the only enlisted men treated in quarters. The return is made up to 12 M. Friday, and represents seven complete days, regardless of the date on which the year may close. The form is a large folio, at the head of which appears the average strength for the seven days. The first page contains the English nomenclature of diseases and injuries, with nine columns as follows: Remained at last return; Admitted into hospital during the week; Transferred from other hospitals (to include those sent from other stations for invaliding); Died. In hospital and Out of hospital; Discharged, To duty and otherwise (those otherwise to be noted in the column of remarks); Transferred to other hospitals; Remaining. This page is a purely numerical report, and closely resembles the monthly form used by us some years ago. Half of the second page is taken up with the detail of regiments at the station whose sick are treated in the hospital. The regimental

names are written in, followed by troops detached (naming the place) whose sick are treated there, and the names of other corps (staff or administrative). When these exceed thirty, they have a line to themselves. The sick of each regiment are accounted for numerically in columns similar to those on the first page, which are preceded by one giving the average strength of the enlisted men and followed by one of the average daily sick. Remarks are required when more than thirty men of any particular regiment left or arrived at the station during the week. This report by regiments is succeeded by a recapitulation of the same figures by Arms, which are designated thus: Household Cavalry, Cavalry, Artillery, Engineers, Foot Guards, Infantry, Regimental Depot, and Garrison Staff and Departments. No decimals may be used in either of these reports, the totals of which must agree with each other and with the average strength reported on the first page. Following is the actual strength present of non-commissioned officers and men on each day of the official week, the first of which is Saturday, with the total and the average for seven days irrespective of the days the troops were present. Next are the names of the men who have died in hospital, giving the usual military data, and the cause, date and place of death, and the duration in days of the disease. This is followed by the names of men in hospital whose diseases have been changed during the week, which includes the disease for which admitted, the date of admission, the disease which has supervened, and the date on which observed. Upon the third page appear the names of men who have died out of hospital, similarly arranged. This is succeeded by a record of sick officers, embracing age, disease, dates of being placed upon and taken off the sick list, result and remarks. Following this is a form for sick women and children (including only the families of enlisted men). The strength present for women and children is given. Then for each class are the number of those who remained at the last return, since placed on sick report, died, and remaining, with a series of blank columns in which the diseases are arranged according to the nomenclature. Practically this does not include the trivial cases, such as are frequently prescribed for without material interruption of health. Sanitary notes upon the troops, their quarters, and their special diseases are required.

The more important diseases shown upon page one are to receive remarks, as are their distribution among the different corps sending sick to hospital. When there is a case of small-pox, typhus, enteric, or other infectious disease, whether among officers, soldiers, or families, the rank, name and regiment are to be reported; the barracks and other places where contracted are to be specified; and when it is in soldiers' families, the medical officer states the number of attacks and deaths during the week and whether in his opinion it is attributable to local insanitary conditions and the steps taken in the matter, and in the subsequent returns he gives the results of his recommendations. He will specifically remark on all cases of suicide or attempts thereat, stating the method, the supposed motive, the name of the individual, corps, years of service, and in attempted cases the result, as discharged to duty, invalided, discharged the service, or remaining in hospital. In suicides the coroner's verdict will be given, or if no inquest was held it will be stated. The number of nights in bed that the soldiers have is to be stated on this return by regiments. After the signature of the responsible officer follows a list of all the medical officers at the station, with the duty of each and the number of patients attended by each attached to the hospital, including the officer in charge. The officers in charge of troops and of officers and families supply the information on those subjects respectively. This is followed by a nominal return of all men, not regulars, not included above, who have been under treatment; but should there be a strength of more than thirty, or there be five sick of either class present, a formal return with such manuscript alterations as required is prepared for them. The information in relation to the strength of regiments and the number of nights in bed is sent to the medical officer by the commanding officers concerned, on prescribed forms. Should a patient be received with two diseases, he will be admitted for the more serious one; but should the second disease persist after recovery from the first, or should a new disease supervene, the termination of the original case will be noted as "discharged otherwise," and the case will be newly admitted, both on the Return and on the Admission and Discharge Book. This feature is worth imitation in the interest of accuracy. I have failed to find the odious term "cure," as applied to

the termination of a case, in either the regulations or the forms. This blank is made to fold in four, and folding into itself with the proper address printed on the fourth or outside fold it requires neither envelope nor sealing. The duplicate is sent to the Principal Medical Officer, and should errors in the original be discovered an amended copy is sent through this officer. No monthly return of sick is made.

The Weekly Return has been described in detail, because it marks the radical difference between the British system and our own. Theirs is an elaborate numerical exposition, having no reference to individuals who return to duty and accounting by name only for those otherwise disposed of and the officers. Their medical history sheets, and the proceedings of the Boards by which invalids are released from service, determine the relation of the individual's disability to the question of duty, so that the current reports may safely ignore him as long as he remains a soldier. At the best the British pension system for enlisted men discharged for disability is meagre in amount and temporary in duration. It does not, as a rule, contemplate a prolonged or an effective support. But our own pension system, large in scale and wide in embrace, is now so thoroughly interwoven with our military vital statistics that it is not probable the two can ever be separated. Our own system of medical reports is defective however in supplying for the posts practically no vital statistics. There are numerous individual items, but to understand the health of the command at any particular time all those items must be laboriously differentiated from the others. It is true they are discussed at Washington, and in peace that may be sufficient. War would be over before the present system would show how diseases as diseases, not sick men as individuals, are distributed. A brief numerical summary of diseases might be of great practical value. But my study of these British figures does not lead me to advise for our service such frequent or voluminous reports, numerical or otherwise. In view of the ease with which special reports can be had when needed, weekly accounting in this way would be for us a waste of clerical strength in preparation and utilization. Nor would the result, even with our simpler organization, be commensurate with the labor in the attempt to differentiate between regiments and arms in the same or indeed in



different garrisons. When necessary, if at all, such facts can be selected and consolidated from the reports on file in the Surgeon General's office. When very large commands are mobilized, a simple weekly report, showing gains and losses, with the vacant beds remaining, is necessary for the controlling authority. Their larger garrisons, and especially the state of their commands abroad, take the British reports out of the line of direct example for us in this particular. Nevertheless I can scarcely conceive the condition under which I should recommend such minute detail on so many points. The use of the word "discharge," as from hospital, while the man remains in the service, is confusing. To limit discharge to his demission from the army and to use "duty" to express his joining the command would be more logical. "Discharge" in this sense is applied to the hospital as it is to civil hospitals, apparently unmindful that the hospital is one of the military factors.

During an epidemic of serious disease a special return relating thereto is made weekly. Should more than one epidemic prevail, a return is made for each. These are discontinued after the interval of a week from the last admission.

The Weekly Sick Return is accompanied or followed by a Casualty Report for every death. This is not the report made to the commanding officer immediately upon the occurrence of a death. The same form is used for officers and men. It gives date, corps, station, and particular barracks, cause of death, dates of admission and of death, and place of death. This includes the original cause of admission and the changes of disease made previous to death. A short summary of the case, according to printed headings, and the post mortem appearance of the internal organs follow. Unless the relatives object, an autopsy is always required. This report is accompanied by the medical history sheet, and both are filed with the Director General.

#### *Annual Return of Sick and Wounded.*

Each station hospital also makes an elaborate Annual Return of Sick and Wounded on a blank of sixteen large pages. It gives first the average annual enlisted strength; the number constantly sick,

obtained by adding together the days under treatment of each man and dividing by 365 or 366; the average sick time of each soldier, by multiplying the average number constantly sick by the days in the year and dividing by the strength; the average duration of each case, by multiplying the average number constantly sick by the days in the year and dividing by the admissions. It then reports the following particulars: The number admitted for each disease, separately and for the sub-groups, groups, and classes of the official nomenclature; the number who died in, and out, of hospital of each disease; those remaining; the average number constantly sick; those discharged the service for disease; and those invalided. A numerical abstract for each month of average strength, admissions, died in, and out of hospital, remaining the last Friday of the month, average constantly sick, and remarks concerning large changes of strength. A return of the corps or parts of corps who have been sick in hospital. A classification of the diseases, wounds and infirmities of invalids, in quinquennial periods of age and years of service. Detail of arms of service represented by the preceding corps. A return of the strength, admissions, deaths and invaliding of men by quinquennial periods of age. The average strength of officers and the rate per thousand of their admissions and deaths, with the admissions by disease, deaths, invalids, and remaining. The same as to women and children, including in each case the class of invalids. A return showing the strength of officers, of women, and of children on the first of each month. One giving the enlisted strength, the admissions, deaths, and invaliding in each month, by years of service in the command. (For the purpose of this return the British military forces over the world are divided into eleven geographical commands.) A nominal return of deaths in hospital of enlisted men, and another of those out of hospital. A vaccination return of recruits, soldiers, women, and children, each, to show perfect pustules, modified pustules, or failures, in vaccination and revaccination from arm to arm or by preserved lymph, with totals. A classified return of operations performed and of deaths following them. A nominal return of enlisted men invalided and officers given sick leave, embracing age, years of service, period of residence, disease, period under treatment, whether

the result of this climate or of previous service elsewhere, and in the case of an officer where and for what period he has gone. The whole closes with a report under eleven headings, chiefly connected with the sanitation of the hospital and the station, but including the number of men admitted for diseases occasioned by intemperance, directly or indirectly. This paper is accompanied by a Report of Medical Transactions and a Sanitary Report by the officer in charge of the sanitary arrangements. The Transactions is a manuscript review of the professional work of the year and of the prevailing diseases, and of the bearing thereupon of the sanitary conditions. The Sanitary Report has been described.

The general remarks made in connection with the weekly sick return are applicable to the annual return, when considered in relation to our smaller army and more homogenous garrisons. The foreign return ignores the individual soldier until he becomes permanently non-effective; but we must keep him under observation whenever on the sick report, at least at fixed stations. The monthly curve of disease can be drawn in the Surgeon General's office from the data there, as indeed it would seem might be the case at the central offices abroad. And the minuteness of statistical detail demanded, while possibly open to error in any event if prepared by a clerical force occupied by current work, seems to require the supervision of a specially qualified officer, whose services might be more effective in some other direction.

#### NON-DIETED HOSPITALS.

At stations where less than one hundred men are quartered, or when militia are assembled where there is no military hospital, a hospital is opened for which the Medical Department does not supply the food, but the ordinary ration is drawn from the patients' companies. When necessary a few "extras" are supplied by the Medical Department and stoppages are made only for actual issues of these. If for a command of forty men these hospitals are equipped with two beds, for seventy men with three, and for ninety men with four beds, and they are administered in all respects except as to diet as ordinary hospitals. But where the command is less than forty, no hospital

equipment is supplied, the men use their barrack bedding and utensils, a regimental non-commissioned officer takes charge of the equipment, for which the commanding officer is responsible, and the attendants come from the troops.

#### FEMALE HOSPITALS.

A hospital for women and children is a recognized part of the larger garrisons. In its absence an available room in barracks may be allotted as such a ward, with the sanction of the Commanding and the Principal Medical Officers. The wives of non-commissioned officers (a phrase excluding warrant—our non-commissioned staff officers) are invariably admitted for their first confinement if there is room, and are entitled to admission in subsequent confinements if living in wooden huts or in one room in barracks or quarters. Where hospitals are set apart for the purpose, cases of scarlet fever, small-pox and diphtheria are always admitted to limit their spread. Other infectious maladies are ordinarily treated in quarters, and no infectious case of any kind may be admitted to a hospital for parturient or general disease.

By regulation the weekly statistics are entered on the return of the station hospital in combination with all other cases, not ephemeral, in families. But at Aldershot, for some reason, the Female Hospital reports independently. Infectious diseases and deaths are specially noted. Statistically, only soldiers' wives and their children under the age of fourteen are recognized. All other members of soldiers' families, notwithstanding they may have been treated out of kindness, and officers' families are ignored. The regulations for these hospitals are omitted here.

#### LUNATIC HOSPITALS.

In official connection with, but locally detached from the General Hospital at Netley, is a military Lunatic Hospital under its own administration. This is a specially built and equipped institution for the accommodation of both officers and men. The Government does not assume permanent charge of its insane soldiers, but they are ultimately discharged and distributed to their respective parishes. The large station hospitals contain apartments specially designed for



the temporary care of such patients. Ordinary lunatics are turned over to the parish authorities; dangerous lunatics are sent at once to asylums devoted to the pauper insane.

#### GENERAL HOSPITALS.

General hospitals differ from station hospitals chiefly in their more complex administration and in their reception of invalids as well as of local sick. The senior medical officer is a Principal Medical Officer, usually with a major general's rank, who is responsible for the conduct and discipline of the whole. The Registrar [Executive Officer] prepares all returns and reports for the Principal Medical Officer; he commands the detachment Medical Staff Corps; he is responsible for the accuracy of the Admission and Discharge Book, and for all the forms and returns connected with the invalids, and he furnishes the Principal Medical Officer with a daily State of Sick. The Division Medical Officers are responsible for the groups of wards committed to them, for their order and their management, for their sanitation, and for the treatment of the sick. The assignment to wards of the medical officers belonging to their divisions rests with them. The Ward and Orderly medical officers discharge duties similar to those at station hospitals. The supervising and consulting functions of the division officers do not relieve the ward officers of direct responsibility for the sick.

At Netley, the General Hospital to which all or nearly all the invalids from abroad are sent, a staff officer is stationed who receives his orders from and represents the commanding general of the district. The arrival of all invalids and their assignment to wards are reported to him. He commands the station and troops external to the hospital, and conducts all the correspondence not medical with the corps. While he has no authority whatever over the internal order and control of the hospital, he exercises many functions that with us naturally fall upon the medical officer in command. It is a dual arrangement that offers nothing for our adoption.

#### FEMALE NURSES.

At the General Hospitals and at some of the station hospitals, at home and abroad, female nurses, known as Nursing Sisters, are employed. They are selected from a list of candidates by the Direc-

tor General, and are directly supervised by a Lady Superintendent or an Acting Superintendent, but all are under the instruction of the medical officers. Where they are on duty the nursing sisters are the actual nurses for all general cases and are responsible for the personal cleanliness of the patients, for the administration of everything ordered by the medical officers, for the custody in the wards of such supplies, and they have the immediate direction and instruction in nursing duties of the attendants. They do not nurse at night except under special circumstances and when two can be detailed together. No nursing sister is on duty in an infectious, venereal, or convalescent ward. When on duty they wear a uniform made conspicuous by a scarlet cape, and they may not enter their wards out of uniform, nor any other than their own at any time without authority. Their discipline seems to be good and their services to be intelligently and efficiently rendered. They go abroad for five years at a tour, according to roster. The impression that I received of this trained section of the nursing staff was very favorable. I think, however, that their usefulness in our conditions would be limited to hospitals larger than those of our peace establishment.

#### SUPPLIES FURNISHED BY THE MEDICAL DEPARTMENT.

The Medical Department issues only surgical instruments, appliances and materials, and medicines and medical materials.

Every medical officer below the grade of surgeon-colonel must keep himself supplied at his own expense with a pocket case of specified pattern. At the headquarters of every military district the Principal Medical Officer keeps a not very elaborate surgical equipment, for loan on requisition to the hospitals within the district. This is in the nature of a temporary and emergency supply, and one part is a bag of midwifery instruments. I did not learn how instrumental cases are delayed until the requisition is filled.

The surgical equipment list for a station hospital with 1,000 troops is copied here from a sense of the interest with which it will be read. It is: one each, corkscrew, caustic holder, set of gum elastic catheters, ear syringe, box of fracture and dislocation apparatus, filter, hone and strop, irrigator, measuring tape, operating table.

pill machine, post mortem set, scales and weights, scissors, screw-driver, spreading spatula, stomach pump, case of surgeon's instruments, urinometer apparatus, and vapor bath and cloak; two each, pot spatulas and stethoscopes; three each, bolus knives and eye-baths; four pus basins, and twelve suture pins. These are kept in good order by half-yearly requisitions. The instruments are held under lock and key.

Medicines and medical material are issued at home on half-yearly, and abroad on annual, duplicate requisitions through the Principal Medical Officer, by order of the Director General. In Ireland the Principal Medical Officer orders issues. But these and surgical materials are not to be required for on the same form, although they are accounted for on the same return. The principle by which surgical appliances are distinguished from medical material reminds one of the arbitrary gender of continental nouns. Thus, plaster spatulas are surgical and plaster skins are medical; bolus knives are surgical, bolus tiles medical; common needles surgical, packthread medical; tape surgical, pins medical; oiled silk surgical, waterproof cloth medical; flannel for fomentations surgical, surgeon's tow medical.

The official list of medicines and medical material corresponds very fairly with our list of medicines proper. Everything besides medicines and instruments and a few articles such as corks, pill boxes, vials, plasters and the like, belong to other departments than the medical. No scale of allowances is established, officers using their own judgment as to amounts; but it is enjoined that the whole list is not to be called for at one place, and that intermediate demands [special requisitions] are to be avoided as far as possible.

The requisitions are simple lists of articles wanted, and take no account of those on hand, but are accompanied by semi-annual returns upon which both medical and surgical supplies appear. Abroad the requisitions and returns are annual, and the latter are verified by Boards of Survey. The supply year abroad begins the first of April.

There is no purveying or supply department in the sense that ours is organized, and there is no effort to purchase in a cheap market as such. When the Director General approves a requisition, he sends

it to be filled by one of two or three reputable dealers, who ship the supplies direct. Freight charges are paid by the receiving medical officer with funds from the Pay Department, and the vouchers go to the Army Service Corps officer in charge of transport. A medical officer witnesses the opening of all medical supplies, and reports breakages or deficiencies, which then are investigated. Abroad, supplies are opened in the presence of a Board of Medical Officers.

The most of the medicines are furnished, as thus described, direct from the dealers, but a complete supply of medicines for one Army Corps and a large quantity for a second corps are kept in reserve at the Herbert General Hospital, Woolwich. And in order that this stock may not become old, these supplies are issued in turn to hospitals and are replenished from the dealers, so as to renew the entire supply once in two years. With an adequate system of inspection, and especially by purchasing from firms of established reputation, this simple method might, with slight modifications as to transportation, profitably be adopted for the bulk of our supplies.

No invoices nor receipts, other than the requisitions themselves, are given with the supplies. At the Medical Division of the War Office the requisition is "Approved to be supplied by....." It thus becomes an order on the dealer. When the supplies are shipped, a printed form on the back "Packed in cases..... chests....., casks....., hampers.....," is filled in, and it becomes both a bill of lading and an invoice. It goes with the supplies to the receiving officer, who signs a final certificate of receipt and correspondence, and the paper goes back to the Director General as a voucher. The combination of requisition, invoice and receipt in one paper is a marked step toward simplicity.

The return that accompanies the requisition shows the amount of each article on hand at the date of the last return, that received by each invoice, the total, the quantity expended, that remaining, and the amount required for on the accompanying duplicate requisitions. Always abroad and when necessary at home is appended the certificate of a Board of Survey that they have taken stock, that the quantity and condition of each article is as stated, and that the expenditure



has been fair and reasonable and strictly in accordance with the entries. This is a presumed check on carelessness, but it is not clear how a Board has knowledge of the nature of expenditures that are made as those in a hospital must be made. The routine appointment of a Board to vouch for an officer's certificate is not acceptable.

Medical property is transferred in detail on relief from the duty to which it pertains, stating on the return the condition of each article.

An annual report is made to the Director General on the first of October upon all medical supplies received during the year, and to substantiate the report objections to the quality will be noted from time to time. So that their source may be more readily traced, medicines from different firms are not mingled in the same receptacle. Where there is a store-room for medicines at the hospital the key is kept by the medical officer or the quartermaster, the surgery [dispensary] bottles are replenished under a medical officer's supervision, and all issues to the compounder are entered in a store book, receipted and checked. This book is kept by double entry, on the principle of debtor and creditor. The disposition of empty packages is according to a regulation like our own. Purchase of articles not on the supply list is disallowed if made without previous sanction of the Principal Medical Officer, unless under circumstances so urgent as to admit of no reference, when covering authority must be immediately sought. Disinfectants and fumigants are not furnished by the Medical Department, but through the officer in charge of barracks. Ice is not supplied by the Medical Department. Trusses are required for individually and in duplicate, and a nominal list of their issues is appended to the return made to the Director General. Each truss is expected to last three years, and if renewal is required sooner a full explanation of the circumstances is to accompany the requisition. Other prothetic apparatus is not applied for to the Director General, but to the Commissioners of Chelsea Hospital.

A few powerful and poisonous drugs, somewhat curiously selected, are kept in fluted glass bottles under lock and key. The quinine is tinted with sulphonate of rose aniline, which is innocuous and undergoes no change with acids.

The books supplied by the public are, briefly, the regulations affecting the Medical Department. No professional books are issued to hospitals, except the pharmacopeia, the optical manual, and a yearly copy of the Army Medical Report. The more permanent and larger hospitals have professional libraries and reading rooms, maintained by the officers themselves. The Government supplies no periodical medical literature to officers or to stations. Medical officers are required to procure at their own expense, and to keep in their personal possession, with their good condition and correction to date verified by stated inspections, The Queen's Regulations and Orders for the Army, Royal Warrant for Pay and Promotion, Instructions for Encampments, Manual for Military Law, Regulations for the Medical Services, Infantry Drill, and Nomenclature of Diseases.

#### CORRESPONDENCE.

There are certain mechanical points of difference from our own system in the correspondence of the army at large, which of course embraces that of the Medical Department. A letter is written on foolscap one-fourth of which is reserved for a margin on the left, and in the upper left hand corner is briefly noted its subject, as Medical Board, Leave of Absence. At the head of the page are the rank, name and corps from whom, and the officer or head of department to whom, it is sent. Every communication is also regularly addressed and signed. Each paragraph is numbered and enclosures are noted in the margin or are separately scheduled. All names of foreign peoples, countries and places, and in active operations all proper names, are written as nearly as may be in italic print, the letters being separate, as *Monadnock*. *Oconomowoc*, *Huachuca*. If the letter is contained on one page and there are no enclosures, a half-sheet is used, and blank fly-leaves are always removed from accompanying papers. The system of endorsement does not prevail, and all replies, remarks, or inquiries arising from an original letter or memorandum are made in the form of successive minutes. The first follows on the page where the original communication ends, and the person making it marks the original No. 1 and his own minute No. 2, in red

ink if possible. Each succeeding minute follows immediately its predecessor by date, and is numbered in sequence. A fresh half-sheet is added whenever needed, for neither the space if any between the minutes nor the margins may be used for writing. These successive half-sheets are pinned together at an upper corner, and often make a bulky and cumbrous document, whose physical integrity is somewhat precarious. In contrast to the above an exceedingly convenient form is used for minor communications, or the informal collection of immediate information, and is known as a Memorandum. This is a regularly issued army form. It is the size of a half-page of cap, the word Memorandum is printed at the top, it is divided symmetrically its whole length by a heavy black line and transversely by another a little less than one-third down. The upper sections bear the words From and To for the correspondents' names, and the right hand one is also marked Answer. Each half has a place for date below the cross line. The Memorandum makes a complete document, but is only for impromptu and local use and not for formal record.

All periodical or routine reports and returns are forwarded without letters of transmission.

The duties heretofore considered are those of executive officers. Attention is now invited to the administrative officers.

#### PRINCIPAL MEDICAL OFFICER [MEDICAL DIRECTOR].

A Principal Medical Officer is appointed to a District or to troops in the field, and is "on the staff of the Army." The officer at the head of a General Hospital is also a Principal Medical Officer. Colloquially, and frequently officially, this title is abbreviated into P. M. O., without disrespect being thus implied. The Principal Medical Officer is responsible to the Commanding General for all medical arrangements and sanitary duties, for the administration of the hospitals in his district, and for the distribution and discipline of his medical officers and the Medical Staff Corps, and he issues the necessary orders for hospital administration, the welfare of the sick and the internal administration of the corps. He is responsible that junior medical officers have opportunities to become acquainted with all branches of their duties. In all these respects he possesses much

more authority and is much more important officially than our Medical Director.

He makes annually to the Commanding General a confidential report of all medical officers serving under him, which is forwarded to the War Office for reference and filing. He inspects at convenient times the recruits of those corps near him, to determine the physique of the men who enter the army. He is responsible that the medical inspection of the embarking troops and of their transports is efficiently carried out, and that the ships are properly equipped with medical supplies. He exercises general sanitary supervision over all commands in his district, submitting his suggestions and recommendations to the Commanding General, and forwarding them to the Director General. He inspects in detail according to a special schedule all places where troops are quartered, once a year abroad and twice a year at home, and makes orally or in writing to the commanding and to the medical officers such recommendations upon those subjects as he may consider necessary. He inquires into the cause of any epidemic disease among troops, and recommends to the commanding officer of the station such measures of precaution as may be necessary. He reports to the Director General the occurrence of epidemic disease, whether among the troops or in the civil population, and during its continuance he furnishes a weekly memorandum. He causes any suspected water supply to be examined. He forwards to the Director General a Quarterly Sanitary Report, containing a summary of all the reports of the medical officers under his supervision, retaining the originals. This is accompanied by a Distribution Return of the Troops and of the sick, compiled from those of the medical officers, which he similarly retains.

He examines the diet and extra diet sheets when received from the hospitals of his district, and transmits them as soon as possible thereafter to the district officer in charge of supplies. In inspecting hospitals he must check irregularities or apparent waste and report them to the Director General for his action. Deviation from the authorized dietary in individual cases is permitted only when there is unusual severity or complication, and the histories of such cases are to be submitted to the Director General, at their termination, in



an abstract from the case book, to show the necessity for the course pursued. This is an excellent example of the stress laid upon minor expense out of the routine; the cases being reported for their pecuniary and not their clinical bearing.

The Principal Medical Officer obtains annually from the War Office and distributes such stationery and forms as are required for his whole district. He may contract with a civil practitioner when there is no medical officer, with the approval of the commanding general. But the approval of the Director General and of the Secretary for War are necessary should a compensation higher than the regulation be demanded.

Except for Aldershot, which is the Depot of the Corps, he is the accounting officer for clothing and equipment of the division of the Medical Staff Corps serving under him, and he keeps the books and makes the returns. At his stated inspections he minutely inspects each detachment of the Medical Staff Corps as to its efficiency, equipment and discipline. He transfers men of the Medical Staff Corps within his division.

The Principal Medical Officer refers to the Director General only questions of positive doubt or difficulty, and he invariably expresses his own opinion upon any paper sent to higher authority.

In certain large commands, as Aldershot, the Principal Medical Officer furnishes the Commanding General with a manuscript Weekly State of Sick. This is not laid down in regulations, but it supplies useful information in a convenient form. This State gives each corps, the number that remained, were admitted, discharged (from hospital, that is to say), died, remain, strength, average daily sick, percentage, and the principal diseases by groups, with the number of sick officers and the usual information concerning them.

Confidential communications are prepared by the Principal Medical Officer, and are kept in distinct files in his personal custody.

For convenience, the method of recording correspondence is considered here. Letters Sent are treated substantially as our own. Letters Received are noted in a Register. This is a large volume, where two pages facing each other are divided into eight columns of unequal width. These are headed as follows, and are used accord-

ingly: (1) Office Number; the consecutive number put upon the letter by the recipient; (2) Date of letter, by figures 13, 8, 91; (3) From whom received, as, Dir. Gen. M. D., P. M. O., A. A. G. (b), (4) No., being the office mark of the writer, as 49-M. S. C.-75.; (5) Enclosures, number thereof, as 1, 4, 2; (6) Subject. This, the most important, embraces about one-half of the line that extends across the two pages. One-third of this space is given up to the briefest possible description of the purport, as Move, Transfer, Truss, and then follows the gist of the paper itself, as 7963 Pte. B. Ross to proceed to York for duty; (7) How disposed of, as O. C. Depot; (8) On what date, again by number, as 14, 8, 91. Enough lines are reserved for the proper disposition of all correspondence likely to be associated with the original, and a red line separates it from the next. In these additional lines letters written by the officer in charge of the Register are also taken cognizance of, and it thus becomes a combined record of communications received and sent.

The following is an example, the perpendicular lines indicating separate columns extending across both folios:

Office Number	Date of Letter.	From Whom Received.	No.	Enclosures.	Subject.
57	13—8—91	Dir. Gen. M.D.	{ $\frac{49}{\overline{\text{MSC}}}$ $\frac{75}{\overline{\hspace{1cm}}}$		Move.
	14—8—91	P. M. O.			
	15—8—91	A. A. G. (b)		1	
	17—8—91	P. M. O.		1	
	22—8—91	O. C. Depot.			
Subject Continued.				How Disposed of.	On What Date.
No. 7963 P. B. Ross to proceed to York for duty Applies for Route [Transportation]. Forwards Route No. 1468 A'shot '91 Ack. Re'pt Forwards Rec'pt for Route. Depot Rec'pt filed Reports Service Completed 20 inst. Forwarded				O. C. Depot.	14—8—91
				A. A. G. (b)	14—8—91
				O. C. Depot.	17—8—91
				A. A. G. (b)	17—8—91
				D. G. M. D.	22—8—91

That represents the complete history of such a transaction as this: On 13th August, 1891, the Director General of the Medical Department ordered a certain member of the Medical Staff Corps,

in this case at Aldershot, to report at York for duty, and this order was sent by the Principal Medical Officer who received it, to the officer commanding the depot where the man then was, the day after it was issued, or presumably the day of its reception. On the same day the Principal Medical Officer applied to the proper Adjutant General, for transportation for this man. The next day the Adjutant General sends a transportation order called a route, of a specific number, with the request to have the receipt acknowledged. The original is sent to the officer commanding the depot on 17th. On 17th also the Principal Medical Officer forwards the receipt (filing the depot receipt) to the issuing Adjutant General, and on 22d the officer commanding the depot whence the soldier departed reports the service was completed 20th, which notice was forwarded the same day (22d) to the Director General. Thus a history of the entire transaction, that involves the five letters from four officers, is preserved in five lines. When properly indexed, the record is complete. Incidentally this illustrates the minuteness with which such matters are noted. A system approaching this is in vogue in some of our administrative departments; and it is desirable that a modification of it, as might easily be arranged, should supplant the bald and crude methods prevailing in our hospitals.

#### THE DIRECTOR GENERAL.

The Director General, selected almost invariably from the highest grade, and holding office for seven years irrespective of age, is designated the responsible Head of the Department and is charged under the Commander-in-Chief with the administration of the medical services of the army and auxiliary forces, including the Medical Staff Corps, with the supervision of the medical and sanitary duties of the army, the preparation of statistics and returns, the supply of medical stores and the preparation of estimates. He nominates for appointment the medical officers for the more important duties, as Principal Medical Officer, the Officer in Charge and sometimes the staff of General and certain Field and Station Hospitals, Hospital Ships, and Female Hospitals, the Registrar [Executive Officer] of General Hospitals, the command of the Depot Medical Staff

Corps and of the Bearer Companies, the Staff of the Training School of the Medical Staff Corps and the Staff of the Recruiting Districts. Except under very special circumstances these officers may not be removed without his sanction. He details medical officers, the Medical Staff Corps and others for duty under the Principal Medical Officers. He keeps a roster of officers on duty at home for duty abroad, but in appointing Principal Medical Officers he is vested with the amplest discretion to select for each district and command the officer he regards best suited for the peculiar duties of that particular station. Besides the advice usually given the War Department in connection with the hospital arrangements of the army, he will before an army takes the field, when required by the Commander-in-Chief, give in writing his opinion on all matters connected with the health of the troops, with special reference to the region concerned. He issues to the Principal Medical Officer of every army in active service such a code of instructions as may seem necessary for the special circumstances of each case.

As the commanding officer of the Medical Staff Corps, he issues all orders to it in his own name. He issues orders to the Medical Department by command of the Commander-in-Chief.

The functions and authority of the Director General as just sketched greatly transcend those of the Surgeon General of the United States Army, and by his seven years' tenure of office the public service escapes a succession of appointments made on the eve of retirement. The system of promotion to the higher grades in the Medical Department, which at every step offers incentive to individual development, appears efficient. Selection may always be abused, by prejudice for or against the person; but at least it gives the opportunity to place responsibility in accordance with ability. Strict seniority, which makes longevity the sole condition of succession to the more important posts, gives way to a stimulus to zeal and the encouragement of personal qualities. By restraining promotion in the lower and medium grades to seniority, moderate ambition and moderate abilities are satisfied; and then opening the higher ranks to choice presents a stimulus for exertion, and relieves the administra-



tive positions from the inertia and indifference that sometimes accompany age.

Before discussing active service, attention is invited to certain general functions of the Medical Department, such as its relation to Vaccination, Infectious Diseases, Recruiting, and the Organization and Development of the Medical Staff Corps.

### VACCINATION.

Every recruit not bearing distinct marks of small-pox is vaccinated upon joining the depot of his corps, unless this has been done since enlistment or during militia service. But militia recruits need not be vaccinated unless they have no distinct marks of small-pox or of vaccination.

The militia differs from ours in being a regularly enlisted body, paid by and under orders from the central authority. For certain stated periods they are quartered with and instructed by the side of the regular troops, and transfers from them to the latter are not uncommon. The British Militia and the Volunteers are in no respect to be confused.

The vaccination is recorded on the man's medical history sheet as a part of his personal history, and on the Vaccination Register as a matter of public record. Successful vaccination or re-vaccination after entry into service need not be repeated while with the colors. But medical officers with troops inspect every March all women and children under their care, and by April 1st certify the results to the Director General. All soldiers' wives who have no distinct marks of small-pox or of vaccination are to be re-vaccinated. All soldiers' children are to be vaccinated or re-vaccinated when necessary. Vaccination Registers are kept at the station hospitals to show the results with men, women and children, and the medical officers in charge compile an annual return, with explanatory remarks, to show the results of the operations for the year, and from these the Principal Medical Officer compiles a summary for the Director General.

Direct vaccination is officially recommended in preference to the use of lymph from tubes or points, but in such arm-to-arm operation, or in re-vaccination, the lymph may not be taken from adults

nor from the products of re-vaccination. Every case of small-pox must be accounted for in the remarks in the Weekly Return of Sick, and should it be in a soldier and no vaccination mark exist, that fact, the date he joined his corps, and the depot or station through which he passed, are reported. The Vaccination Register is ruled in nineteen columns, with a multiplicity of detail not necessary to repeat in this abridgment. I saw no Register in actual use, but the form does not account for a double index, by name and organization, which is required to make it complete. Comparison with our badly arranged and imperfect Company Vaccination Book is to our disadvantage. The latter, from its want of system, soon becomes a confused medley, where occasional facts may be discovered, but it is not a record where they may be displayed.\*

#### SANITATION IN INFECTIOUS DISEASE.

A distinct section of the regulations is set apart for the consideration of sanitary precautions in connection with infectious disease. Such an outbreak is immediately reported to the Commanding and the Principal Medical Officers. Itch is coupled with cholera and choleraic diarrhoea as requiring barrack bedding to be used in hospital, and when no longer required the straw is burned and the bedding, the hospital clothing, and such clothing worn on admission as is not liable to injury thereby is disinfected "by such means as may be practicable." They are then steeped in boiling water and subsequently washed with soap and water.

In cholera cases such articles of the soldier's kit as cannot be steeped and washed are to be removed to the hospital, fumigated, exposed to the air and sun for a week, beaten and brushed. Special instructions in relation to cholera, embracing the ordinary provisions clearly expressed, are attached to the regulations; but they do not refer to the importance of boiling the drinking water or of using acidulated drinks.

In cases of scarlet fever, puerperal fever, small-pox, or diphtheria, the infected rooms are to be vacated, the windows opened until they are thoroughly ventilated, the furniture, floors, and painted wood-

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\*The Company Vaccination Book has very recently been abandoned.

work scrubbed, and the bedding, clothes, carpets, etc., thoroughly cleansed and disinfected before further use. The ceilings are to be whitewashed, the walls if papered are to be scraped and repapered, or if not papered are to be scraped and finished as before. This work is carried out under representations in writing from the medical officer attending the case to the commanding officer for a part, and from the senior medical officer to the Royal Engineers for the remainder. Barracks and quarters, the seat of infectious disease, are fumigated, ventilated, cleansed, and left unoccupied as long as may be necessary. Barrack bedding used in infectious cases before transfer to hospital, has its straw burned, and bedding and clothing not actually in use are disinfected by heat or boiling water and transferred to the officer in charge of barracks to be washed. The hair of hospital mattresses will be exposed to the air and if practicable heated to  $212^{\circ}$ , and the other hospital bedding and clothing will be disinfected by heat and chemicals, boiled, aired and washed. When boiling or dry heat is employed, chemical disinfection is regarded unnecessary. Articles that cannot be treated thus are taken to the hospital, fumigated, exposed to the air, beaten and brushed.

The materials for fumigation and disinfection, including quicklime, are furnished by the officer of the Service Corps in charge of barracks, but the work is done under the orders and supervision of a medical officer, by men attached to the hospital. The expense of cleansing quarters and rooms for reoccupation is paid by the officer in charge of barracks.

When the removal of an infectious case is necessary, application stating the nature and urgency of the case is made to the officer in charge of transport, and the conveyance is disinfected before further employment. When destruction of public or private property is absolutely necessary on sanitary grounds, the medical officer reports to the military authorities to obtain authority. But when delay involves risk or danger to the troops, he acts on his own responsibility and explains in justification afterward. I found no provision for reimbursing individuals for the necessary destruction of personal clothing. The foregoing illustrates again the minute directions supplied for official guidance.

At Aldershot, and doubtless at other large posts, there is a disinfecting furnace belonging to one of the hospitals. It is a small brick room, heated by a small thin iron furnace at one end of it, capable of developing a high temperature quickly and cheaply.

#### DISCHARGE FROM SERVICE.

The regulations recognize twenty-two different contingencies, with several items to each, under which men may be discharged. Except when this is under certain dishonorable conditions, every man receives a certificate of discharge and a certificate of character. Every discharge is accompanied by a waterproof envelope, in which it may be neatly and securely kept. The adoption of this inexpensive but valuable device is earnestly recommended.

#### INVALIDING [DISCHARGE FOR DISABILITY.]

The term "invalid" is applied to men whose discharge for disability is advised. The formality of accomplishing such discharge is Invaliding. When a man is regarded as unfit for military service by actual disability, regardless of his length of service, the medical officer in charge prepares a Detailed Medical History. This is on an elaborate form and is quite different from the Medical History Sheet previously described. It gives under nine printed headings the man's military data, including his periods of service in all parts of the world. Eight others, for whose answers nearly two pages of cap are devoted, describe the disability; treat of its origin from every point of view, including the influence upon it of intemperance, other vice, or misconduct; if a wound, all the circumstances under which it was inflicted; any defects or the results of previous injury or disease, although not connected with the disability under consideration, are to be noticed, so as to elucidate any claim that might be founded thereon; full particulars of any previous recommendation for discharge and the reason for remand to his regiment; probable effect of disability on capability of earning a livelihood; and whether the discharge is proposed for permanent unfitness, or at expiration of first term on account of present inability to re-engage.

To prepare this, the medical officer obtains from the man's commanding officer his defaulter sheet [court martial record] and records



of courts of inquiry (upon injuries) for inspection. He also prepares a Medical Report, extracted in the main from the Detailed Medical History. This is made up of seven questions and answers in relation to the proposed disability, one the most significant being, in the event its being attributed to exposure on duty, "How far it was a necessary incident of the military service from defects in housing or clothing, or from long endurance of other hostile causes to which persons in civil occupations are not ordinarily subject?" The object of this paper, which requires the approval of the Principal Medical Officer, is to guide the Commissioners of Chelsea Hospital, by whom all pensions are awarded, in their decision on the man's claim. In preparing this and the Detailed Medical History, medical officers are required to discriminate carefully between the man's unsupported statements and official evidence. Should epilepsy be alleged, there must be a certificate from a medical officer that he has actually seen the man in a true epileptic fit. It is characteristic that the company commander has no personal part in the preparation of these papers.

The medical officer in charge of the hospital must verify all the statements in the detailed history, countersign it, and become responsible for its correctness in every particular before transmitting it to the Principal Medical Officer.

The Principal Medical Officer then carefully sifts and verifies the statements in the Detailed History, and inspects the proposed invalid. Should he concur with the medical officer in charge, he advises the Commanding General that the soldier be examined by a Medical Board. On the application of the Principal Medical Officer the Commanding General causes the man to be examined by a Medical Board, the President of which if possible shall not be under the rank of a surgeon-colonel. The Board records its opinion on the third page of the Detailed Medical History, and submits its proceedings to the Principal Medical Officer (whose previously expressed opinion in favor of the discharge was a pre-requisite for the assembling of the Board). Should the Commanding General concur with the Board, the discharge is ordered. Where invalids are sent from abroad for discharge, the Detailed Medical History is sent with

them, but not the Medical Report, which is prepared where they are finally disposed of.

The special characteristic of this procedure is the extreme and apparently superfluous pains to have every step supervised and controlled. The Principal Medical Officer examines and approves the papers in the first instance, he examines the man personally and recommends his discharge, and again he reviews the action of the Board. The process seems a relic of the older time, when the executive medical officers may not have been as well trained and when under the longer enlistment the service was practically for life and offered greater temptation for prolonged and skillful malingering. There is nothing, under our shorter terms and with our medical officers, to lead to imitation in our peace establishment, or to suggest more restrictions than the disapproval that now rests with our Medical Directors. But with the improvised army that war would create, some of the inquiries as to the effect of service would be appropriate.

#### RECRUITING.

As is well known, the British army is maintained by voluntary enlistments. The physical conditions for acceptance as a soldier vary greatly within certain general limits for different branches of the service, and they are also changed by orders from time to time for the same corps. The medical officer is responsible for the measurement of the height, chest and weight of the recruits, and for their age being in accordance with the army schedule. At present the requirements for the mass of the army are: minimum height, 5 ft. 4 in.; weight, 115 lbs.; age, between 18 and 26 years; chest measurement, between 64 and 66 inches of height, 33 in., 66—70 inches of height, 34 in., above 70 inches, 35 in. These points will be taken up presently.

While not directly bearing upon the duties of medical officers as such, the question of maintaining a large army without compulsory service is of interest; and some of the formalities wherein the British methods differ from our own are worth study. When a candidate offers reference as to character, the Recruiting Officer uses a form of polite inquiry to the referee, asking five questions: Capacity in which

and for what time known; When last seen; Character as to sobriety, honesty and respectability; Previous service in the army, militia or navy; Married or single,—with space for answers, the paper to be returned. The man is then served with a notice by a non-commissioned officer requiring him to attend at a specified hour and place “for the purpose of appearing before a Justice to be attested for Her Majesty’s Army.” This notice explains to the recruit under eleven distinct headings the conditions of service, so far as the division of the twelve years for which he engages is concerned. Men may enlist for twenty-one years or long service; or, as generally done, for twelve years or short service. The twelve years are divided between the colors and the reserve, into 3 or 7 with the one and 9 or 5 with the other, as they elect. At the end of either period they may re-engage. He is also told on the notice that he may be discharged within three months of enlistment on the payment of not more than £10. The back of the notice contains eighteen questions to which he must reply on enlistment, and false answers to any of eight of these, as to apprenticeship, marriage, imprisonment and military service, render him liable to two years’ imprisonment with hard labor.

Upon his attestation [enlistment] which is effected by a civil magistrate, not a military officer, he signs the answers to these eighteen questions and declares they are true, and his signature is witnessed. He then takes the oath of allegiance to the crown and of obedience to Her Majesty and to “the Generals and Officers” set over him, and his signature is again witnessed. Then follows the certificate of the Justice that the questions were read to the recruit who “understands each question,” and that he has signed the declaration and the oath in his presence, giving place and date. The questions point, among other matters, to the particular parish where he would become entitled to support, if necessary, and one, “Are you willing to be vaccinated or re-vaccinated?” is at once unusually precise and recognizes a popular prejudice. A negative answer stops the enlistment. I do not suppose that at the large recruiting offices, as in the great cities, the reference as to character or the formal notice of attendance is specifically carried out, but that the applicants are taken

up for examination as expeditiously as possible. Also, of course, the physical examination and the inspection by the recruiting officer are completed before the man is brought before the magistrate for the questioning and the formal oath which completes the enlistment.

The medical officer is charged with determining that the intelligence of the recruit is sufficient and that his physical condition is sound. The chief variations from our own methods of examination are: 1. Chest measurement. To obtain this the tape is placed so that the upper edge lies immediately below and touches the shoulder-blades and the lower edge touches the upper part of the nipple, the arms hanging loosely and the surface not compressed. This position of the tape gives a larger apparent capacity than by our method. When the tape is thus applied, the recruit counts slowly from 1 to 10 and the circumference noted at 10 "is to be considered the correct chest measurement." It is also spoken of as the minimum measurement, and it is directed that the maximum expansion of the chest should also be taken and be recorded as a denominator, as 33-35. Fractions less than half an inch are not to be noted. Although both sets of figures are to be recorded, the so-called minimum is that upon which the recruit's acceptance depends. This is not reached by forcible expansion and, as just pointed out, the situation of the tape gives a larger record than with us. Chest mobility therefore plays no necessary part. It results that men are accepted who are below our standard. 2. Vision is determined by dots instead of by test-types. 3. Should the recruit present no satisfactory evidence as to age, the medical officer will decide his age and note him as "physically equivalent to" so many years and months. But the man's own statement is taken as his official age, and he is entered as such on the public documents. 4. The minimum weight, 115 lbs., is below our standard. 5. There is no minute search for and record of distinguishing marks, such as we now use to expose fraudulent enlistments and to identify deserters. A record of the more conspicuous marks only is made, as in our older fashion.

The attestation paper, which is the most important document both for the army and the man connected with the soldier, consists of four large pages and is made in duplicate. The first page is filled



with the eighteen questions and answers, the recruit's declaration and oath, and the certificate of the magistrate or attesting officer. It is the enlistment paper, properly so called. On the second page are noted under the heading Description: Age physically equivalent to (so many years and months); height; weight; chest measurement; complexion; hair; religious denomination. Marks are noted in an adjoining space. This would be the basis of a Descriptive List, although no such additional paper is prepared. Should the medical officer think the man has served before, he attaches a slip of paper to that effect, unless the man acknowledges it.

Succeeding is a certificate of medical examination, to the effect that the recruit presents none of the disqualifications enumerated in the regulations, that his vision with either eye is as required, that his heart and lungs are healthy, that he has free use of his joints and limbs, and that he declares that he is not subject to fits. Then follows the simple statement "I consider him (fit or unfit) for the Army." "Fit" and "unfit" are the simple and universally employed terms by which the qualification of the soldier is expressed at almost every point of his career. The Recruiting Officer then follows with a certificate that the recruit was inspected by him and that he considers him (fit or unfit) for the service in the (regiment or corps) and that due care has been exercised in the enlistment. Following this is the Approving Field Officer's certificate, that the attestation is correct and properly filled up and that the required forms appear to have been complied with, and "I accordingly approve and appoint him to the (regiment)." The man's destination is fixed at once.

The enlistment of men who do not agree in physique with the standard requirements is provided for on a form that gives a brief description of the man. The officer commanding forwards this, with his reasons for recommending the application, to the Adjutant General, at the Horse Guards, where it is authorized or disapproved. When authorized, that paper is attached to the attestation, and the deficiencies or other variations from the standard are thus condoned. It is my understanding that these "special" enlistments very frequently occur.

The third page of the attestation paper is arranged for a statement of services as to corps, changes in grade, dates with special reference to service not allowed to reckon for fixing the rate of pension, and that in the Reserve not allowed to reckon toward good conduct pay, each entry to be certified by an officer. This is in extension of the descriptive list idea.

The fourth page is the man's Military History Sheet. This, which is totally distinct and different from his Medical History Sheet, is arranged to show his service at home and abroad, by country and time. It notes the military school through which he passed, if a boy: certificates of education; passed Classes of Instruction; campaigns; wounded; effects of wounds; special gallantry; medals, decorations, &c.; deferred pay, issued and refunded; name and address of next of kin; particulars as to marriage, giving the woman's names, whether spinster or widow, date and place, names of officiating minister or Registrar and two witnesses, and date when placed on the married roll; particulars as to children, giving Christian name, date and place of birth, date and place of baptism and name of officiating minister. Each of these entries is certified by the initials of an officer. The entry of "next of kin," which appears on the descriptive list of our own Marine Corps as "name and address of nearest relative or friend," is a point that might be adopted on our descriptive lists, in one form or the other, with advantage to both the Government and the soldier.

All the original attestations are not sent to a central office, as might be anticipated, but are distributed among twenty groups, each of which has a distinct place of deposit, but none is sent to the headquarters of the army, the Horse Guards. Consequently there is no common place for comparison or reference. The duplicates go to the man's commanding officers and accompany them at home and abroad. All incidents affecting the man's enlistment, appointment or deprivation as to rank or pay, conviction by civil authority or court martial, and his whole service at home or abroad, are to be entered thereon as they occur. The duplicate attestations are sent at the beginning of each year to the custodians of the originals for checking, so as to preserve them in accord.

The attestation paper is practically an original enlistment paper and descriptive list combined, with the account of pay and clothing omitted. The duplicate replaces our Descriptive Book, and, in the absence of muster rolls prepared at regular intervals and containing the data that we enter upon them, the originals at these diverse headquarters serve that purpose. Each man's record is thus separate and distinct, instead of being crowded between those of others and reiterated from six to twelve times a year; or, as sometimes is the case, passing to the rolls of different companies by transfer and to different parts of the same roll by promotion or reduction. But while our own system involves much clerical labor, I failed to learn how the accuracy of this multiplicity of separate papers and their security are maintained during really active campaigns of considerable duration.

There is no second physical examination, at the depot or elsewhere.

As soon as a soldier is assigned to a corps, he is given a regimental number which is never changed. Nor in the case of death or discharge is a number once assigned bestowed upon another man. In all documents pertaining to the soldier the number invariably precedes the name. It is sometimes a convenient means of rapid identification in reports, especially in the field, as for instance in the Specification Tally Book for noting the disabled. This has lately been introduced bodily, numbers and all, into our own medical service as Diagnosis Tags, without the least explanation of the meaning of the numbers, which do not belong to our system. Should a man going into action wear his number on a metal tag suspended about his neck as a scapular, he could be determined with the aid of his regimental marks without difficulty. This I believe the Germans do. The numbers are given in sequence, authority to commence a new series being obtained as 9,999 is approached. The Royal Artillery and the Royal Engineers are extended ten and three times as many respectively. An assumed name under which a soldier may enlist cannot be erased from his papers. He may if he desire, certain formalities being accomplished, follow his assumed name by his true name as an alias.

The Medical History Sheet of a recruit is prepared by the approving medical officer at the time of examination. Only such physical marks are noted on it as have a professional interest. This goes forward with the attestation to the commanding officer of the man's corps, by whom, when the man's regimental number is inserted, it is given to the medical officer in charge of the station hospital. The details of this paper and its disposition have already been described.

At every place where recruits are examined Recruits' Registers are kept, which may not be removed from the place of examination. Registers of Recruits, a different book, are kept by officers commanding regimental, auxiliary, artillery and recruiting districts. Recruits' Registers require the particulars to be fully stated under each of the following heads, whether the recruit is found fit or unfit: Date; regiment or corps; name; apparent age, years; height, inches; weight, pounds; chest measurement over the upper part of the nipple, inches; marks of vaccination or small-pox; place of birth, subdivided into parish or county, or country if abroad, England, Ireland, Scotland, British colonies, Foreign countries; trade or occupation; state of education, subdivided into well educated, can write, can read only, cannot read; primary inspection, secondary inspection, transfers from the militia, each of the last three being divided into fit and unfit; whether previously served; remarks as to cause of rejection, and any distinctive marks; with the medical officer's signature.

An Annual Return of Recruits is furnished to the Principal Medical Officer by the medical officers in charge of recruiting. The Principal Medical Officer prepares a summary of these which he sends with the original to the Director General. I believe these are numerical, not nominal.

#### PHYSICAL EXAMINATION OF OFFICERS.

The responsibility for the fitness or unfitness of candidates for commissions in the army rests entirely with the Medical Boards. But they are not to reject eligible candidates for shortness of stature or other slight physical defect.

If a candidate can read Snellen's D=6 at 6 metres or 20 feet, and D=0.6 at any distance selected by himself, with each eye separately,



he will be considered fit as to vision. If he cannot read with each eye separately without glasses  $D=36$  at 6 metres, i. e. if he have not 1-6 normal vision, although he may be able to read  $D=0.6$  at some distance, he is unfit. If he can read with each eye separately  $D=36$  at 6 without glasses, but not beyond, and the defect may be corrected with glasses so that he can read  $D=6$  with one eye and at least  $D=12$  at 6 with the other, and at the same time can read  $D=0.8$  without glasses at any distance he may select, he is fit. Squint, color blindness, or morbid condition subject to aggravation or recurrence, of either eye rejects.

#### THE MEDICAL STAFF CORPS AND ITS DEPOT AND TRAINING SCHOOL.

##### *Qualifications of a Recruit, and General Considerations.*

As its name implies, the Medical Staff Corps is a body of soldiers exclusively instructed and commanded by the Medical Staff. Its Depot and Training School is one of the units going to make up Aldershot Camp. This camp, or more properly cantonment, constitutes District X. of the Home establishment, and contains an average force of 14,000 men of all arms, the whole being under the command of a general officer of high rank. The Depot of the Medical Staff Corps is under the direct command of a Surgeon-Lieutenant-Colonel and is as independent of other local control than that of the General Commanding the camp as any brigade within the lines. The Director General of the Medical Department is the commanding general of the Medical Staff Corps as a whole, including the Depot. The medical officer in direct command is responsible for its order and discipline, establishes his own guard, holds his own parades, inflicts summary punishment as other battalion commanders, signs discharges ordered by the commanding general, has as his adjutant a medical officer thus detailed, and a quartermaster. The men are quartered, clothed, fed, paid, drilled, disciplined and instructed in their special duties as any other body of troops. In describing the management of this depot and of the men themselves, it may be understood that, as the principles and methods applied to them are those used with the mass of the British army therefore, *mutatis*

*mutandis*, what is said of the Medical Staff Corps is closely applicable to the Infantry of the line.

The Medical Staff Corps is recruited from civil life, or from non-commissioned officers and privates of other organizations of the army who volunteer for transfer as privates, and who successfully pass a three months' probation at the depot of the corps if at home, or with a detachment of it if abroad. The term of enlistment, as for other troops, is twelve years, of which three or seven, at the recruit's option, are with the colors, the remainder being in the Reserve. The shorter term may be voluntarily increased by the soldier, with his commanding officer's approval; the commanding officer for this purpose being the medical officer commanding the depot at home or a Principal Medical Officer commanding a division at home or a detachment abroad. Thus a private enlisted for three years with the colors may extend it any time during that service to seven years, and when in his seventh year to twelve years with the colors. Non-commissioned officers within one month after the expiration of a year's probation, or at any time after three years, may extend to twelve years; and other soldiers enlisted for not less than six years with the colors may extend to twelve after three years' service, provided they are thoroughly efficient and possess one good conduct badge. The conditions under which men may re-engage so as to complete a period of twenty-one years' service are too diversified for repetition here. Nothing in any of these methods commends itself for our imitation, in preference to the system of uniform relatively short term enlistments.

The recruit must be able to read understandingly both print and plain manuscript, and to write; he must have a certificate of good character, and in addition to the usual physical requirements be pronounced by the medical examining officer to be in his opinion suitable for the Medical Staff Corps. He must be between 18 and 28 years of age, the limits for infantry being 18 and 26 years. As in other parts of the army, boys may be enlisted for training in the field music, or as tailors. When qualified as trumpeters, drummers or buglers, or on reaching the age of 18, they cease to be classed as boys. Boys are

also taken for training as Band Musicians in the army at large, but not in the Medical Staff Corps.

The limit of height for the Medical Staff Corps is between 63 and 65 inches, but an exceptionally good recruit who offers for that corps only, may be accepted outside of that limit with the approval of the Commander-in-Chief. The limit of height does not affect transferred men. The minimum of height for infantry is 64 inches. I am justified in saying that medical officers of experience do not regard with satisfaction the limitations of stature for these men; and it is obvious that for the conditions of our own service an under sized corps with consequent inability to handle heavy men would be unsuitable.

The other physical requirements of the recruit are those for the infantry of the line already described, except that vision need not exceed one-half the normal.

Immediately after enlistment the recruit is sent to the depot at Aldershot, where he is at once put into barracks, uniformed, and fed as other soldiers, and is carefully and persistently drilled for four months. Should a recruit after fair trial appear, from any cause, within the first three months, unlikely to become a good medical staff soldier, it is so represented, and generally speaking his discharge is ordered by the commanding general. This also applies to other branches of the service, and a discharge showing simply unfitness for any particular corps does not debar enlistment in some other part of the army. If it has been found judicious in an army whose strength is maintained with difficulty to discharge without prejudice early in his career a soldier simply unfit, and this in the interest of the government and not of the man, it is worth consideration whether it would not be expedient to adopt some such method of relieving ourselves of the helpless dead weights, incapable but not vicious, with which we are sometimes burdened.

A system of transfers between different corps is provided for by somewhat elaborate regulations, but in general terms it may be said that men of the Medical Staff Corps, if originally enlisted for the general service, may be transferred to any other corps on account of misconduct or unsuitability; but if enlisted for this corps, they can only be transferred with their own consent. This re-transfer of men

who originally enlisted for the general service and who prove unfit for the special duties, is perfectly logical and to be imitated. Upon their own application men of other branches may be transferred to the Medical Staff Corps with the consent of all the officers concerned, but they must first pass a three months' probation with the corps, and non-commissioned officers can only be received as privates. This provision for a probationary period is admirable.

### ORGANIZATION.

The number in this body varies year by year with the estimates [appropriations]. At the time of my study there were 2,401 enlisted men, as follows: 8 buglers; 1,748 privates, divided into 3d, 2d, and 1st class orderlies and lance corporals; 280 corporals and lance sergeants; 213 sergeants; 80 staff sergeants, second class; 40 staff sergeants, first class; and 32 sergeants major. In addition, 15 boys between 14 and 16 years of age are enlisted for instruction; 10 as buglers and 5 as tailors. On reaching the age of 18 the buglers may be transferred as privates if they desire. Privates are advanced or reduced from one class to another at the discretion of the commanding officer, with the approval of the Principal Medical Officer; and non-commissioned officers are lanced with the approval of the Director General. The permanent non-commissioned officers are appointed by the Director General by selection, having special reference to seniority, from those with a clear military record who are qualified. The standards of qualification vary with the grade. Sergeants major are appointed after examination from first class Staff Sergeants. From the Sergeants Major are selected the Quartermasters of the Medical Staff, who are officers with honorary rank.

The gradations are carefully and somewhat elaborately arranged, as in their other military organizations, but in the main the scheme presents a necessary proportion of non-commissioned officers with appropriate duties. These are regarded, I think justly, as absolutely essential to the proper maintenance of discipline, to which their military designations are important aids. In hospital they are assigned as compounders, wardmasters, stewards, etc., expressions which designate duties, neither grades nor ranks. The status of every



man in the corps is thus defined in relation to every other man, precisely as in other bodies of troops; and the men themselves do not suffer from the want of places to which they may aspire and by whose mutual relations the order of the whole is better supported.

We do not require the ten grades besides the boys and the buglers, but it is certainly necessary to have adequate steps between privates and the highest non-commissioned staff. Our Hospital Corps now resembles a regiment made up of privates and sergeants major. A private can hope for no promotion until he has acquired competent proficiency to discharge and superintend the gravest and most important duties that fall to enlisted men, and when thus qualified and advanced he is thereby lifted out of the performance of subordinate service. There is but one intermediate position, and that without actual rank,\* in which to test a man's capability to control others, and especially to offer encouragement by gradual progress. Our crude organization requires re-arrangement to embrace two classes of privates as in our Engineers and Ordnance, and the appointment of corporals and sergeants, with lance appointments for emergency and probation. Efficiency, to say nothing of symmetry, requires such an arrangement, and we may call this established system to witness its feasibility and its necessity.

#### PAY.

The pay of the Medical Staff Corps ranges according to the following schedule. To appreciate it in its proper relation it must be compared with that of the infantry of the line as a standard. An infantry private gets 1 shilling a day, and the non-commissioned officers rather less than those of the Medical Staff Corps. Extra pay for extra duty is given under certain conditions to the infantry as well as to the Medical Staff Corps, but that of the latter is higher. The Medical Staff Corps soldier gets two kinds of regular pay, regimental and corps.

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\*Since this was written the rather absurd grade of acting steward has been recognized as a *de facto* position.

Grade.	Daily Pay.	
	Regimental.	Corps.
Boys under 18.....	8d	_____
Buglers.....	1s 2d	_____
Buglers over 18.....	1s 2d	6d
Privates 3d class.....	1s 2d	4d
"    2d    "    .....	1s 2d	6d
"    1st   "    .....	1s 2d	8d
Lance corporals.....	1s 5d	8d
Corporals.....	2s 1d	8d
Lance sergeants.....	2s 4d	1s
Sergeants.....	2s 8d	1s
Staff sergeants 2d class.....	4s 3d	_____
"    "    1st   "    .....	4s 6d	_____
Sergeants major.....	5s 6d	_____

In addition, all these men may receive extra-duty pay for extra duty; as, for instance, in charge of lunatics, in charge of infectious cases, as compounders, in charge of mortuary, on troop ship, or as drill instructors. The rates of extra pay vary from 4d to 1s 6d, but speaking generally are from 4d to 6d a day. From the pay as just stated are these regular stoppages in the Medical Staff Corps, which are substantially but not identically the same for the army at large: For groceries 3 1-2d a day, for washing 1d a day, and for hair-cutting 1d a month. Therefore, reckoning the penny at two cents and deducting the regular stoppages, it appears that while the ordinary infantry private will receive in cash about \$4.80 a month, the Medical Staff Corps private gets, according to class and exclusive of extra-duty pay, from \$8.10 to \$10.50 a month. In both cases this includes their washing and presumably their barber's accounts. The lowest grade of extra-duty pay would increase this to \$10.50 and \$12.90 respectively, while it might be higher. The non-commissioned officers receive similarly from \$12.30 to \$36.90, with a possible increase for extra duty. It is a feature common to the whole army that long and good service carries with it pecuniary reward. Good conduct badges, each of which carries an additional penny a day (60 cents a month) to privates and lance corporals are issued thus: A man clear of regi-

mental entry (for offenses) for two years gets one, after six years two, after twelve years three, after eighteen years four, and after twenty-three years five. Or, if clear fourteen years he gets five. After eighteen years' service a man with four badges may receive a good conduct medal, which entitles him to a gratuity of £5 on discharge. These badges and the benefits they carry may be forfeited by misconduct. An annuity may be awarded in connection with a meritorious service medal.

### TRAINING.

The first month of the recruit's stay at Aldershot is devoted to physical training [setting up] and squad and other elementary exercises; the second to the manual of arms and to musketry; the others to special instruction by lectures and recitations in the names and uses of the ordinary appliances of the Medical Department, and in stretcher and ambulance drill and in pitching field hospitals. During the whole period he is constantly exercised in company and rudimentary battalion drill. He also goes on guard and piquet. A class in cooking is carried on at one of the large hospitals of the camp, attendance at which is voluntary, but graduation in it as a cook or a superintending cook gives opportunity of earning better pay. No instruction except in cooking is given in hospital to recruits at depot. After four months of this instruction the recruit is liable to be assigned to a station, at home or in the colonies, for duty.

It is one of the anomalies that although on duty at all other stations and on troop-ships to India, the Medical Staff Corps does not serve in that empire. Medical officers of the British and those of the Indian establishments may serve together, exercising command according to their respective rank, but the medical service in India is under entirely different regulations from that of Great Britain and the colonies, and the duty similar to that discharged by the Medical Staff Corps elsewhere is done there by natives.

A permanent party of well instructed Medical Staff Corps soldiers, averaging 125 men, is kept at the depot, and the average number of recruits constantly present is 100. These are divided into companies commanded by medical officers. Between 300 and 400

recruits pass through the depot annually, besides whom all the men transferred to foreign service from home stations, and all the men returning from foreign stations for duty at home, pass through the depot. This is to facilitate the change of dress, necessary according to climate.

All Medical Staff Corps recruits at depot are diligently taught infantry drill, and all their formal movements with or without litters, or stretchers as they are invariably called, conform to those of infantry. Careful and constant observation of the drill, which was extremely interesting from the pains and thoroughness with which it was taught, showed that the medical officers at Aldershot had brought their battalion into an admirable and enviable military state. Necessarily adjusting the movements of their stretcher bearers to those of their infantry, as we must to our own, I may say at once that I saw nothing except their zeal to recommend for our adoption, and in several particulars our own methods are simpler, the movements more quickly executed, and the exercises more diversified and better adapted to the general end in view, the speedy relief and collection of the disabled. As an article of drill equipment the knee-cap, a piece of heavy leather buckled about the knee to protect the trousers, which they use would be a convenient guard from the mud in practice.

#### DRILL PHRASES.

As a matter of curious and passing interest, not of importance, I note a few examples where the same drill phrases have different meanings from our own, and where similar ends are reached by methods different from ours, as well as some movements that we do not use. In general terms it may be said that the British Infantry drill of 1889, although simpler than that formerly in vogue, is more involved, the movements more complicated and the commands more prolix than our own.

The salute with the hand is practically that that we have lately abandoned, except that the hand is held at the salute while marching six paces, or for other distances according to circumstances. The Guards when in fatigue dress preserve the archaic form of removing



the cap when out of doors and standing at attention; an evident survival of ancient civil manners.

When several officers are saluted in company, only the senior acknowledges it.

In slow or quick time the pace is 30 inches; the cadence in slow time, which we no longer use, is 75 to the minute, and in quick it is 120, making the distance traversed in the same time the same as ours. They also use a "stepping out" pace of 33 inches, and a "stepping short" pace 21 inches, our short step being 15 in quick and 18 in double time. The pace in double time is 33 inches and the rate 165 to the minute, against our 36 inches at 180. The side step like ours is 12 inches, except when clearing another, when it is 24 inches. In stepping back the pace is 30 inches, where we would use 15 inches.

To "stand at ease" the arms are first raised in front of the body and then brought down, when the palms strike each other smartly; the right foot is brought back six inches; the left knee is slightly bent, the arms hang loosely; the right hand is held between the left thumb and palm, the weight on the right foot. To one accustomed to silence as a military feature this loud slapping of the hands, although in unison, has a startling and not pleasant effect. At least one of the American benevolent associations that adopts a semi-military form for parade uses the same device to appeal to popular attention, but the effect is more theatrical than martial.

To "stand easy" the man may move without quitting the ground. On drill and parade the privates and corporals wear no gloves. "Turn" is applied to individuals where we would say "face." The command "wheel" is used to change the direction of a column. In forming line as a company, a space of 24 inches is given each man, and the elbow-to-elbow touch is preserved. The position of the captain is three paces in rear of the company centre, except in charging when all the officers pass to the front. The officer commanding the parade does not draw his sword, except when the battalion is to be inspected. Companies habitually form in two ranks and the odd numbers are known as the right and the even numbers as the left files. Fours are formed from a halt thus: The rear rank steps back 18 inches, and the

left file then steps 24 inches to the rear with the left foot and 24 inches to the right with the right foot, thus making a body of men with a front of one file and a depth of four ranks. They then stand "fours deep." A front of fours, or of four files, does not seem to be practiced except when the march may be by the flank after "fours deep" have been formed. Fours are formed on the direct march to the front by the rear rank stepping short 2 paces, the right files marking time 2 paces, and the left files moving into their proper places. This formation of fours deep in accordance with the infantry drill, that permits and requires compactness in large bodies with folded stretchers, economizing space, is necessarily only a marching movement; but its influence upon the single detachment is bad, in that it forces all the men to the same side of the folded stretcher, not only on the march in close order, but whenever it is carried folded. This is awkward in practice and dilatory in work, requiring one bearer to have stations on opposite sides of the stretcher as it may be open or closed.

Companies are sized toward the centre, the tallest men on the flanks.

For purposes of stretcher drill a company is taken as a unit and assembled in two ranks. The command "Form fours" places all the privates four deep, each set being a detachment. The detachments are then numbered, the centre detachment is announced, and the others are close upon it. The instructor then announces "Front rank, No. 1 bearers; Second rank, No. 2 bearers; Third rank, No. 4 bearers; Fourth rank, No. 3 bearers." The company as it stands is then numbered from right to left in sections of four detachments or sixteen privates, each a section ordinarily being the fourth of a company. The extreme right hand man of the front rank calls out One, the second Two, and so on to the fifth, who is One again. This is carried on in succession to the left by fours, so that all the detachments are embraced in sections. The senior sergeants of a company are always the right and left guides, and they receive the command of the flank sections. The other non-commissioned officers are posted in rear of the other sections and in command of them. The sections themselves are then numbered, the commander of each calling out

No. 1, No. 2, &c., in succession from right to left. The company is now ready to march on stretchers.

The regulation stretchers in use are of two patterns, the old and the new. The older pattern, which it is presumed will be gradually superseded by the other, is of stout canvas stretched between two light ash poles, that are slipped between longitudinal plaits in the canvas. They are kept apart by two iron rods, each fastened by a staple to one pole and, bent at right angles, fitting into a hole seven inches from the end of the other pole. This stretcher has a small horse-hair pillow. The canvas is 6 ft. 8 in. long, the poles 8 ft. 1 1-2 in. long, the total width 2 ft. 2 in., and the weight is 16 lbs. It has no legs, and the top, unloaded, is 1 1-2 in. from the ground.

The new pattern stretcher is made of tanned canvas, fastened to the poles by copper nails through a strip of leather. The poles are square and are kept apart by two flat, wrought-iron, jointed bars. This stretcher has four 3 in. wooden rollers, and the canvas is 5 1-2 in. from the ground. The canvas is 6 ft. long, the poles 7 ft. 9 in., the width is 1 ft. 11 in., and the weight is 32 lbs. A wedge-shaped pillow, varying from 1 1-2 to 3 1-2 inches in thickness is intended to be carried in the ambulance for use with the stretcher. Eyelet holes are let into the canvas near each end to secure the pillow by strings. In the old pattern are attached cords as lashings, and one end of the pillow is free. Each pattern of stretcher has a pair of leather shoulder slings, fitted with narrow transverse straps to secure the folded stretcher. These slings are for use with but are not attached to the stretcher.

The litter with rollers is such an improvement over the primitive device of a sheet of canvas lying on the ground, that it is in high favor. Inquiry without leading questions developed that men who had carried that stretcher in Egypt thought that its nearness to the ground, although of course much better than one not clearing the ground at all, added greatly to the strain in raising and lowering it loaded. The handles, 10 1-2 in., seem to me hardly long enough to give room for a man between them to clear the patient, especially in

carrying a large man whose toes would overhang. This would be particularly the case in the haste of the field.\*

The pillow, whether loose or attached, is a superfluity not worth consideration. It is likely to be lost soon, and if not lost to become stained and disagreeably soiled in actual use. Sometimes it would be in the way, and when required, clothing or extemporized support would make an easier head-rest.

With folded stretchers the canvas is rolled around, instead of being folded upon, the poles and the slings are laid longitudinally on top, with a transverse strap at each end fastened with the buckle.

The actual drill at Aldershot is admirably executed, but in my opinion our manual and drill as a whole are swifter, simpler, and better adapted to the purpose. This abridgment offers selections for consideration. The entire British drill is not reproduced here.

At "Stand to stretchers," the detachment takes post on the left of the stretcher, close to it, and each man touching it with his right foot. No. 1 aligns his toes on the front end of the poles; No. 2 is one pace in his rear; No. 3 aligns his heels on the rear end of the poles; and No. 4 is one pace in advance of him. In procuring stretchers from a pile, the Nos. 3 carry them at a slope [shoulder] and at the command "Lower stretchers," place them on the ground quietly without moving the feet or receiving assistance. At "Lift stretchers," Nos. 1 and 3 stoop, take the stretcher by the right hand, rollers away, and raise with the arm at full length. The stretchers being open they are closed at the command "Fold up stretchers," when Nos. 2 and 4 stand fast, Nos. 1 and 3 turn to the right, kneel on the left knee, lay the slings on the ground, bend the traverse irons inward, raise the canvas that it may not fall between the poles. They then face each other, partly rise, lift the stretcher, and, supporting the poles between their thighs, rollers to the right, roll the canvas tightly around the poles to the right, and spread the slings evenly on top, a strap at each end. The strap is then passed through the loop

\*Since this was written a new litter has been adopted for our service, very low, canvas six feet long, and the poles one foot shorter than the British, with only nine inches for the handles. It weighs nearly eight pounds less than the foreign stretcher, but its other bad qualities are exaggerated.



of the other sling and buckled tightly around the roll. After all this the bearers stand erect, grasping the stretchers with the right hand, and face to the front. A comparison of this with our "Open, litter," although the latter might be improved, shows our manual to be simpler and as effective.

When a quick movement is required by either flank, the somewhat elaborate command is: "The company will move to the right (or left), No. 2 (or 4) taking the stretcher," "Right (or left) turn." To resume the forward: "The company will advance—Front turn."

The commands "Lift" and "Lower" stretchers are common to two similar but distinct operations, viz., the manipulation of the closed and the open apparatus.

It is not worth while to quote at length the somewhat complicated methods by which Nos. 1 and 3 occupy exactly reversed positions in loading and unloading, or to show how No. 4, marching on the right side of the prepared litter, runs back to the left side immediately it is lowered and then runs back again to the right as soon as anything is to be done. To qualify each member of the detachment in all the duties of the bearer, the numbers are changed in one of these two ways, the men standing to stretchers: "Nos. 2 and 4, two paces left close," "Quick march," "Nos. 1 and 4 right about turn," "Detachment (or company) one pace forward—March"; "Front"; "Stand to stretchers"; "Quick march": Nos. 2 and 4 thus become Nos. 1 and 3. Or: "Nos. 1 and 2 two paces left close," "Quick march"; "Nos. 1 and 2 right about turn"; "Detachment (or company) two paces forward—March"; "Front"; "Stand to stretchers," "Quick march." The Nos. 3 and 4 thus become Nos. 1 and 2.

Whatever advantages these methods have, there is not the one of simplicity over "Change posts; March."

I repeat that the drills I witnessed were characterized by patience and painstaking, and the results were triumphs of military exactness, but I remained impressed with the waste of energy in using circuitous instead of direct methods. Our own drill is open to amendment, but not in the direction observed abroad. [The original report follows out the complete procedure.]

### TO LOAD AND UNLOAD STRETCHERS WITH REDUCED NUMBERS.

When the full detachment is working, the stretcher is usually placed by the side of the patient; with reduced numbers it is placed at his head in line with his body, and he is carried over it horizontally. The usual directions are given for extemporizing seats to be used except when there is shock, when the horizontal posture must be maintained.

No provision is made for one bearer to transport an unconscious man. No instruction is given as to lifting a wounded or sick soldier into the saddle. The use of coats with rifles or poles is not taught. The rifle stretcher with slings for two bearers is not described. Rifle stretchers are prepared by tightly rolling two rifles with fixed bayonets in a rug [blanket] from the sides toward each other until a space of about 20 inches is left for the patient. This requires four bearers, each grasping the rifle tightly with both hands. In marching, the bearers on one side step off with a different foot from those on the other.

Two bearers may make a three-handed seat by the right bearer grasping the thick portion of his left forearm with his right hand, the left bearer at the same time grasping the right forearm of the right bearer with his left hand, and the right bearer grasping the left forearm of the left bearer with the left hand. The right hand of the left bearer is then placed on the left shoulder of the right bearer to form a support for the back.

### AMBULANCE WAGONS.

The ambulances, or as they are officially designated, the ambulance wagons, are of two patterns. Neither of these presents any peculiarity of structure or equipment that I should recommend for adoption, excepting that of the brown or tanned canvas cover which renders them less conspicuous in the field.

Both patterns carry two patients recumbent on stretchers, two sitting up in front, and two or three sitting in rear, riding backward. One of the latter seats is reserved for an attendant, if convenient. There are no side seats and the interior is thus practically wasted for the transportation of a number who might sit up, did none require to

lie down. The daily use of an ambulance with a marching column appears to be seriously crippled by this omission. The front seat is reached by a ladder, which must be lashed up before the wagon starts. The rear seat is attained by a step on the tail-board. In the old pattern the driver rides the rear horse and the patients' seat is well inside the body, the stretchers with the recumbent patients passing partly under it. In the new pattern the patients in front sit beside the driver on the box, and the front of the canvas top, like a hood, is much higher than that over the body of the wagon. A back-board or gate goes across the wagon body, cutting off the recumbent patients from those riding at the rear. In the old pattern a special wagon stretcher is used, to which patients must first be transferred. In the new pattern the field stretcher is a part of the ordinary equipment. In the old pattern the front wheels are about the same height, if not actually interchangeable with the hind wheels. In the new pattern the front wheels are low and turn under. These are so low as to greatly increase the draft. The weight of the old wagon is 1,379 pounds, that of the new pattern 1,963 pounds, and the track of each is 5 ft. 2 in. Each wagon is drawn by two horses, and the animals and drivers are furnished by the Army Service Corps. The animals are presumably steady, and the drivers are soldiers, not civil teamsters liable to panic, hired by the Quartermaster's Department. In war each ambulance has two drivers and four horses.

The new ambulance has a wooden body, and a canvas cover, curtains and hood stretched over a skeleton framed roof and supported by six tubular galvanized iron standards that fit into sockets at the sides. A locker for three bushels of grain, inaccessible except through the bottom of the body, and a tank for nine and a half gallons of water, fitted with a leather tube and funnel, are under the body. A movable box is carried on each side, one for wine, the other for tools, small stores, etc. There are straps at the middle of the roof, to carry the stretcher pillows; straps on the front and hind standards, to carry four stretchers inside the wagon; and loops under the stretchers to secure rifles. Valises [knapsacks] and accoutrements are carried at the head and foot of the stretchers. A wooden partition about a foot high separates for their full length the recum-

bent patients, who lie head to the rear. This coffin-like provision appears to be primarily of aesthetic origin. As an officer explained, "I don't think I should like to lie right next to another fellow, you know, if we were wounded." The practical disadvantages of such confinement seem to be outweighed by the charm of seclusion. Patients able to sit up ride with their feet over the tailboard, resting on a support, with an apron drawn over them. These unfortunates are thus partly out of the wagon, fairly exposed to the dust and rain and so placed as to feel the most of the jolting. An apron drawn over them is a partial protection. There is also an apron for those on the front seat.

The drill for loading and unloading is adapted to the transport, but contains nothing appropriate for our needs.

In the use of country carts and general service [army] wagons, as sometimes necessary, it is provided that abundant straw be used and the stretchers placed upon it. When, as sometimes happens, the wounded must be laid directly on the straw, four bearers are required of whom No. 4 must spring into the rear of the wagon and grasp the wounded man under both shoulders, and, with the assistance of the others, lift him in. This implies that he will lie head to the front. Unloading reverses the procedure; and special stress is laid on four bearers in each case to avoid the risk of falls.

#### RAILWAYS.

There are special instructions for loading and unloading trains, but as the passenger carriages [cars] differ so radically from ours in their arrangement, these cannot be made to apply to our railroad transportation.

#### LITTERS AND CACOLETS.

By a litter is meant a folding stretcher for the transportation of recumbent wounded upon a mule. A cacolet is a folding chair into which a patient is strapped and by which he is carried in a sitting position, sideways, upon a mule. In each case a pack-saddle is necessary, upon which the litters or cacolets are hooked in pairs. The saddle weighs 46 lbs., a pair of litters 106 lbs., a pair of cacolets 56 lbs. These are designed for desert or mountain warfare, where



wheeled transportation is impracticable. In each case a counterpoise weight must be resorted to should only one side be used, and trained pack animals always are required. It is unnecessary to repeat their drill.

There is nothing to correspond to the excellent superimposed or Baily litter, and I found no reference to anything approaching our travois of the plains.

In the Netley Museum are models of local transport used in different parts of the world for the carriage of the sick. Observing there the use made in China of the bamboo for bearing heavy loads, animate and inanimate, leads me to suggest the trial of it, as embracing lightness and strength, in the construction of hand litters for field hospital use. They should be cheap, effective, and very light.

#### BEARER COMPANY PRACTICE.

In imitation of active service, bearer companies are exercised in the formation of collecting and dressing stations. I have not actually witnessed this drill, but it is practically as follows: Men, preferably of another corps, are sent over the field to represent wounded, each having attached to his coat a specification tally indicating a supposed wound. The bearer company is marched out in column of fours, with the dressing station party of at least two sergeants and ten privates in the rear, the ambulances, each with a corporal or private, closely following, and the service wagon next. On reaching the exercise ground the command is halted, and at "Form Dressing Station" the non-commissioned officer in charge of that party marches his men clear of the main body and of the wagons. The wagons to be left at this station wheel to the right (or left), take ground to the right (or left), form line at close interval, which brings the horses to the rear. The officers for duty here also fall out, and the station is formed thus:

#### DRESSING STATION.

The operating tent is taken from a general service wagon and pitched door to the front, fifteen paces in front of the centre of the line of wagons, which are faced to the rear. A pair of field panniers is placed in this tent. Two "directing" flags are posted ten paces in

front of the doorway and ten paces apart, and two others in line with these mark the flanks of the wagon line. Each ambulance from the front is required to reverse and halt opposite the space between the middle flags, without crossing that line. It is unloaded by the wagon corporal and the dressing station party, the slightly wounded assembling between the two flags on the left and the severely wounded are carried on their stretchers, between the two flags on the right, are lifted from the stretchers, and are laid on the ground. In both cases each man's arms and accoutrements are laid on the ground at his feet. The stretchers are replaced in the ambulance, which immediately returns to the collecting station. The simple expedient of extra stretchers to obviate laying the wounded on the ground, does not seem to be used. In broken ground, to require the loaded ambulance to turn completely around may lead to additional suffering without corresponding advantage. Unless the ground is very favorable, it would appear to be better for the ambulance to move to the right or left, or be unloaded while halted head on. In practice the extreme formality of position would doubtless be disregarded, and therefore some latitude should be specifically provided in drill. When all the wounded are brought in, the ambulances are retired in rear of the station, the dressing party falls in two deep in front of the tent, the company from the front halts ten paces in front of the flags, and all stand at ease. The medical officer in charge of the dressing station then examines the wounded and explains any errors that may have been made in dressing them at the front. The dressings are then removed, the tent struck, the appliances packed away, and the company marched off.

#### COLLECTING STATION.

Having detached the dressing station party, the company proceeds at least half a mile to the front and ground is selected for a collecting station. A halt is made and the ambulances reversed about ten paces to the rear, when the medical corporals immediately prepare them to receive the wounded by lowering the ladder and the tail-board and placing the back-board and the stretchers on the ground. (In actual practice it would seem that detachable pieces,

as ladders and back-boards, would limit the celerity and thus the efficiency of the ambulances.) The surgical havresacks and water-bottles are served out and spare stretchers are laid on one side. At the command, "The company will search for wounded," if without stretchers, surgical havresacks and water-bottles are distributed, and on reaching the men with suppositious wounds, urgent dressings are applied, and those unable to walk are brought in by one of the improvised methods. If with stretchers, the company is formed and the guides march Nos. 3 and 4, to the ambulances for stretchers, surgical havresacks and water-bottles. The stretcher is carried folded, and is placed beside the first man unable to walk who is found. While Nos. 1 and 3 prepare the stretcher, Nos. 2 and 4 attend to the wounded man. Herein the field practice differs from that of the parade ground. In the ordinary stretcher drill, Nos. 2 and 4 are given nothing to do until the patient is about to be lifted. Even here instead of hastening to the side of the wounded man as the detachment approaches him, Nos. 2 and 4 remain with the stretcher until it is placed by the patient. This may seem a small matter, but it is characteristic of much of the deliberation and formality that mark the work. It is presumed that in actual field duty this rigidity is relaxed in the interest of promptness.

The tight clothing having been loosened, the accoutrements and valise [knapsack] removed, and urgent dressings applied, the patient is placed on the stretcher and carried to the rear, Nos. 2 and 4 bearing his arms and accoutrements. As the detachment approaches the ambulance, Nos. 2 and 4 go forward at the double, lay the man's equipment outside the near hind wheel, and assist in loading. It is insisted that this operation be carried on (in the practice exercise) by the word of command exactly as prescribed, and that No. 4 gives the commands. Their No. 4, who corresponds to our No. 1, is given charge as with us is No. 1, regardless of the fact that should the bearers be reduced, both of the side bearers may be missing and that No. 3, to whom the command is not given, must always be present and be in position to observe both the wounded and the way.

As soon as the ambulance receives its full complement of wounded, it leaves for the dressing station. The wagon corporal is

responsible that previous to its departure the men's arms and accoutrements are stored in their proper places, and that the ladder is lashed in place. He goes with the ambulance to the dressing station, assists in unloading, and returns with it to the front.

The rigid adherence to the methods of the drill cannot be commended too highly or imitated too closely. As in all other forms of military instruction, it is careful repetition and unvarying uniformity that lead to perfection and to automatic work when the test of battle comes.

The bearer companies are also exercised in laying out camps for themselves and for field hospitals. This is in accordance with the general British system of encampments, not necessary to be rehearsed here. The general principle will be described in the account of field service.

#### REVIEW.

In parades for inspection and review, the companies are formed in column, company front, at open order; the Medical Staff Corps thirty-one yards in front of the Army Service Corps and wagons. The ambulances are in front, and the General Service and other wagons in rear, the flank wagons correctly covering the flanks of the Medical Staff Corps, and the remaining wagons distributed at equal intervals between them.

The points of difference from our methods in these minor ceremonies are sufficient to warrant notice as matters of curious interest.

When the reviewing officer arrives fifty paces in front of the centre, he is saluted by the command, "General salute! Carry swords!" (or if armed with rifles, "Present arms! Shoulder arms!") This applies to the men. The officers salute with the right hand, taking time from the commanding officer. The Transport Officer commands, "Eyes right (or left)!" as the inspecting officer approaches the Army Service Corps, and "Eyes front!" when he has passed. The bearer company takes close order after inspection at the command, "Return swords! Close order, March!" The Transport Officer repeats the command for close order, when the rear wagons move up



to their places. There appears to be no provision, either as a ceremony or in the interest of efficiency, for a formal inspection of the stretchers themselves at any time.

In marching past the bearers march by companies, followed at a convenient distance by their wagons in two or more ranks, the ambulances leading. The tail-boards of the ambulances are lowered, the wagon corporals are seated on the hind-seats facing the rear, and the directing flank of each rank of wagons correctly covers the directing flank of the company. It is prescribed that under no circumstances may the stretchers be carried by hand in marching past.

#### INSTRUCTION AT ALDERSHOT.

To return to the recruit: His first two months are sedulously devoted to the same military drill that is given all infantry recruits. In the last two months he is carefully taught by lectures and recitations the technical and special points of his duty. This is conducted by a medical officer in person, who intelligently and strictly carries out his duty as instructor. These instructors are selected and not accidental details. The schedule for the course embraces forty-four working days of four hours each, and these are divided into a lecture, a recitation on the previous day's lecture, stretcher and ambulance drill, practical bandaging and other first aid. Besides this the ordinary company and battalion drills are carried out, so that the recruit has about six hours' military exercises daily. The British regulations are contained in a number of volumes, and they go into the most minute detail on all subjects. Those for the Medical Department are divided into two books called Parts, which may be roughly described as for the officers and for the men. Part II, which is for the men, is taken up with an account of the duties of the various non-commissioned officers of the Medical Staff Corps, with elementary anatomy, physiology and the principles of first aid, and with the various drills peculiar to the medical soldiers. The lecturer takes up the regulations in sequence, according to a printed schedule, omitting those about sergeants, and using them as a text, elucidates the topic for the day. The book being in each man's hands, he is

able to prepare himself sufficiently to understand the general drift of the lecture in advance, and after the lecture to appreciate and retain its salient points. The lectures embrace explanations of all the instruments and of the field equipment and their uses, as well as of theoretical subjects. In like manner the drill is progressive, as laid down in the same book. The practical work of bandaging, which the men do themselves, is supervised by sergeants under the officer.

I wish to emphasize the expression of my opinion that this instruction, like all that I saw at Aldershot, was given with such intelligence and fidelity as to compel the interest and improvement of the men, and that, in turn, they acquired much of what was taught.

### INFANTRY BARRACKS.

The Medical Staff Corps soldiers are quartered, like the bulk of the infantry at Aldershot, in one-story wooden pavilions or huts. (The cavalry and light artillery live in the second story of stone barracks, over their stables.) Various styles of new barracks are gradually replacing the old wooden ones, and the following account of a set of buildings for a battalion of infantry will fairly describe the arrangement of the most improved English barrack of to-day. These are of brick, two stories high, with slate roofs, and they stand north and south in column. The prevailing winds are from the southwest. Each barrack is intended for one company and is T-shaped, the cross being at the westerly end. The buildings are about sixty feet apart in their main length, and thirty-six feet at the T. The exterior dimensions are: 154 ft. 8 in. long, 23 ft. 8 in. wide in the greater length, and 46 ft. wide in the T. The walls are double, 16 inches in all. The outer wall is 4 1-2, and the inner 9 inches solid, with an intervening air-chamber of 2 1-2 inches. They are united by Jennings bonded brick, a perforated brick or heavy tile curved longitudinally. There are no cellars, and the walls rest on a concrete bed below the surface of the ground, with the earth tightly rammed against them. There are no drains immediately about the foundations. A damp-proof course of half-inch asphalt runs around the building below the floor line. There is an air-space of seven inches between the lower floor and a four-inch bed of Portland cement.

The cement rests upon six inches of brick rubbish. The floors in both stories are of Norway pine. In the upper story this is laid longitudinally over a diagonal floor, and the joints are filled with a patent waterproof glue. As this glue softens under heat, it would not be serviceable in our climate. The lower floor is single, with white lead in the seams. The height from floor to ceiling is 10 ft. 6 in. The barrack has neither porch nor veranda, and the only ingress or exit is by two single doors, both on the same side of the building, near the centre. These door-ways open into a hall from which stairs ascend. On each floor, opening out of the hall-way, is a room 12 ft. 4 in.x8 ft. 8 in.x10 ft. 6 in., for a non-commissioned officer, two in all, and in rear of these rooms are tolerably large closets for the care of extra kits, etc. There is no provision for spare arms, for tentage, for field mess equipment, nor for any company property as such in any part of this building, which is devoted to lodging purposes. In rear of the non-commissioned officer's room in the central hall, and opening each way toward the respective wings, is an ablution room on each floor. Each of these rooms is 17 ft. 6 in. long by 7 ft. 6 in. broad, by 10 ft. 6 in. high, and is designed to serve for 55 men. The floor is concrete and asphalt, laid with an inclination of 1 1-2 inches toward the outer side, where the basins, which are public property, are placed. There is an overhead tank holding 300 gallons, supplied by constant pressure, for each barrack. No bath-tubs are in this building, and there are no urinals in it or near it. Urine tubs are placed at night in the hall-way. A recess at the end of each squad-room, in a projection beyond the common line, constitutes a closet to hold brooms, mops, etc. In the older barracks these are stored under the central table.

There is no mess-room. Food is brought from the central kitchen in the vessels in which it is cooked, and it is served on a standing table in the centre of each squad room. The table utensils are washed in the room by the mess orderly, who brings water for the purpose from the kitchen. The original table furniture is supplied by the government, and through a system of strict accountability is replaced by the men as it may become lost or broken.

Each floor, except as already explained, is divided into four

dormitories of not exactly the same size. The T-room is 44 ft.x21 ft., and accommodates 16 men; the two rooms nearest the hall-way hold 13 men each; and the fourth room 12 men; or, including the sergeant, there are 55 men on each floor. The men in the squad-rooms, with all the beds occupied, have an air-space of 600 feet each. By the arrangement of the exits, the rooms become thoroughfares in proportion as they lie near the centre of the building; for the men in the more distant rooms must pass through the others on their way to and from the single exit. The men's kits are held on shelves above the bedsteads, and near the head of each a clasp is let into the wall to receive the rifle. There are no lockers, and no provision for security in the care of private property.

These sleeping rooms have windows at the average of one to every twelve feet of outer wall. They are heated and in part ventilated by fresh air, warmed by Galton's method at the back of a grate in each room and admitted through an opening in the chimney. Cold fresh air is admitted through five or six perforated bricks, or modified Sheringham valves, let into the walls near the ceiling. The air passes out in part by Boyle's extractors, one of which is connected with the flue in each chimney. These are made of numerous delicate small sheets of mica hung so as to move outward with a very light puff of air, but to close with any attempt at a reverse current. As actually placed in these quarters the proximity of the extractor to the opening for the warm fresh air may lead to a short circuit that will interfere with the general movement of air within the room; but the principle is good, and if the sheets do not become clogged with dust it should be effective. There is no ridge ventilation. As the barracks had not been occupied when these notes were made, the practical condition of the ventilation is not known.

Measured by our rules, these quarters cannot be suitably heated by radiation from the grates and by the air warmed in them. It is evident that the English dictum "we need not give ourselves any great concern about the precise degree of warmth" for healthy men, is thoroughly accepted and acted upon in these and in British barracks generally. It is possible that the men are vigorous, but they can hardly be comfortable with the air, as I believe it is, much more



moist, and colder than that standard that places the dry bulb thermometer between  $53^{\circ}$  and  $65^{\circ}$ , and the wet bulb between  $58^{\circ}$  and  $61^{\circ}$ . The standard relative humidity is below 75.

The sewerage for this group of barracks will be the separate system. The storm and ablution water will be carried off together through underground earthenware drains. The latrines, bath-rooms, kitchens and other offices will be on the right (east) flank of the various blocks, and I was told that it was proposed to put in 9-inch sewer-pipe. (This appears excessive for the work to be done.) These sewers will be in straight lengths of 100 yards with man-holes and clearing rods.

#### OFFICERS' QUARTERS.

As incidental to the general subject and complementary to the last item, although concerning the Medical Department only indirectly, these notes of a newly-constructed building for officers' quarters may be followed. They throw light on the genius of the service. The officers of an infantry battalion are quartered in one solidly-built two-story brick building. As the mess is the centre around which the social life of the command revolves, so it is the most important feature of the quarters. A hall in the centre of the block gives entrance to an "ante-room," which is really a large parlor, and a dining room. An L in the rear centre contains a large billiard and smoking room, wash-rooms and other accessories. Still further in rear are elaborate kitchens, sculleries, pantries and servants' rooms, with wine cellars underneath.

The quarters of the Lieutenant Colonel who commands the battalion, are at one end, cut off by a dead wall, and consist of a study or office and two non-communicating rooms on the ground floor, and four non-communicating chambers in the second, or as it would be designated there, the first story. There are competent kitchen offices and several servants' rooms. At the other extremity of the block, but communicating with it by a door, are two sets of two rooms with a kitchen attached to each set on the ground floor, and on the upper floor over these are two sets of two rooms, each set having a small kitchen. The lower rooms are for the majors, and my

informant thought the upper rooms might be for the senior captains.

All the rest of the building is divided into single rooms of moderate size, one room for each captain or lieutenant. No provision is made for any married officer but the commanding officer, and no company officer has any accommodation for a guest except in his own room. The one apartment is supposed to fulfil all his needs as study, chamber and dressing-room, as well as a private parlor. As a matter of fact, a married officer will rent his own quarters in a neighboring town, and will retain his allotted room in which to change his uniform when necessary, or to sleep and dress in when as orderly officer he is obliged to spend twenty-four hours in barracks.

A 1,000-gallon tank supplies water for the building. The storm-water passes off in well-prepared underground drains, and the sewage is carried off by a separate system.

The preceding may be taken as the latest type for quartering regimental officers; but besides this, Aldershot displays all varieties of shelter. A large proportion of officers are quartered in one-story, small, single wooden structures, officially known as huts. These were originally put up for temporary purposes, and have been added to from time to time, probably at the expense of the successive occupants. Although tastefully adorned within and neatly kept without, the rooms are very small and generally inconveniently arranged, and our most temporary officers' quarters, above the grade of a dug-out, will compare favorably with them. Some of those, however, occupied by officers of rank, have gradually expanded so as to cover a good deal of surface, and to present a very prepossessing appearance in the midst of well-kept grounds. The proximity to the conveniences of the market, and the abundance of good service, make the ease of living incomparably greater under such circumstances.

#### MEDICAL STAFF CORPS BARRACKS.

The Medical Staff Corps is quartered, like most of the foot troops, in rows of wooden huts, which the brick buildings just described are gradually replacing. These are one-story, thinly-boarded

cabins, with asphalt roofs, standing end on to the parade. Each barrack is about 22x40x9 ft., and contains 20 men, with an average air-space of 400 cubic feet for every bed. (These figures are approximate, the original memorandum having been mislaid.) The open nature of the walls and ceiling gives free ventilation. The floors are clean but rough. The men sleep on single iron bedsteads, of which there are two patterns. The prevailing style when not in use is compressed, by the foot sliding toward the head. The mattresses are of different materials, that preferred being filled with a woody fibre resembling what we know as "excelsior." When not in use, the mattress is folded over the bolster and strapped into a roll at the head of the bed. There are no lockers, either fixed or as movable boxes, and the men's effects are folded upon a shelf above the head of the bed. For inspection, every article is laid in a specified order upon the bedstead, which is then extended its full length. In these barracks there are no closets; and there are two heavy tables in the central line of the room which serve as mess tables, the division of food being superintended by the corporals. The daily allowance of bread for each man may be kept in this room.

There is one room of entrance, namely from the company street, in the end of the barrack furthest from the parade. This is protected by a small enclosed porch, like a large storm-door, and here a urinetub is kept at night.

The latrines at Aldershot are very good, having water-carriage by a competent system of sewerage. The Supply Department furnishes soluble paper for use there, it being more economical to do that than to open out blocked pipes. These latrines, convenient of access to the company street, are habitually in good condition. The ultimate disposal of sewage at Aldershot is by irrigation on a farm. This is not directly under military control, but is managed by a contractor. There was some complaint by the townspeople, not against the system but against its mismanagement by the contractor in an effort to require too much absorption by a limited area.

#### CLOTHING AND EQUIPMENT.

Upon joining the depot a recruit in the Medical Staff Corps receives the following kit free: Bag, water-proof; blacking, tin of;

braces, pair; brushes, blacking, brass, cloth, polishing, and shaving; button brass; comb; cover for mess-tin; hold-all; hook, for waterproof bag; knife, table; pipe-clay; razor and case; shirts, flannel 2; soap; socks, 3 pair; sponge for pipe-clay; spoon; tin, mess; towels, 2. The total value of these is £1, 1s, 1 1-4d. To these a late order has added a Jersey, which will somewhat increase the value of the free kit. These articles must be kept up afterward at the soldier's expense. It is estimated that a careful man can do this at an annual cost of £1. This probably depends very much on the previous training of the man and upon the service required. The recruit also receives a Bible and a Prayer Book, Protestant or Roman Catholic.

The man has issued to him clothing as follows, free: ankle boots [shoes] 2 pairs yearly; forage cap, 1 yearly; great-coat and cape, 1 every five years; frock [sack or blouse], 1 yearly; frock, undress, issued only to recruits, 1; havresack, 1 every three years; helmet, 1 every five years; leggings, 1 pair until worn out, about eight years; mitts, 1 pair yearly; trousers, 1 pair yearly and 1 pair biennially (3 pair every five years); trousers, undress, 1 pair, only to recruits; tunic [dress coat] 1 every 2 years; and 1 pair of ward shoes, in place of one pair of boots [shoes], if on duty in a hospital, every 2 years. It will be observed that the "clothing" technically refers to outer clothing or uniform, and shirts and stockings go along with the cleaning kit. Drawers are not issued to foot troops. Mounted soldiers receive drawers. Clothing required to replace the allowance spoiled or worn out unduly, the soldier supplies at his own expense. It is my impression that the allowance is not sufficient. This clothing is neatly fitted by the sergeant-tailor, subject to the inspection and satisfaction of the company and battalion commanders, without expense to the man. It is unnecessary to comment on the great advantage of this toward reaching the neat and soldierly appearance that leads a man to take pride in and to live up to his uniform. The clothing is inspected monthly and its condition is checked. It is also inspected when the soldier is going to another country unsuitable for its use, or when he is discharged, and unreasonable damage is charged against him by his captain. From this charge he may



appeal to a Board. Damage to equipments is estimated by the captain or by a garrison mixed Board.

The theory underlying all this is that military clothing, like military arms, is public property put into the soldier's possession to increase his efficiency, and is not an allowance or a perquisite. He must use it for the public advantage, but may not abuse it, and he is not expected to make a pecuniary profit through it. The error, if there is any, seems to be that the allowance is inadequate for its purpose, involving a tax on the man to keep it up; and as the idea habitually associated with clothing is that it is personal property in the most intimate sense, there is probably some degree of dissatisfaction when the man realizes that it is not actually his own, but that he merely has the use of it under somewhat stringent conditions. There is the great advantage that the military clothing remains in the possession of the Government, that it is not degraded and made common by secular use, and that to find it in the hands of civilians is *prima facie* evidence of fraud.

Clothing that has been turned in partly worn may be re-issued, in which case its probable life is noted and the soldier receiving it is credited accordingly.

In barracks a man receives three blankets in summer and four in winter, and one pair of sheets. These are public property for which the company commander is responsible. The sheets are washed monthly at the public expense. A bolster is issued in lieu of pillows. On taking the field the soldier receives one blanket and one waterproof sheet, public property, for which the company officer is accountable, but which are charged against the soldier if lost or damaged.

The tunic is a scarlet dress coat, very similar in pattern to our own. The frock is a close counterpart of our blouse, but with a standing collar on which is the corps badge. It is dark blue in color, and is braided above the cuff. Good conduct badges are narrow chevrons or stripes worn across the lower part of the left sleeve. The great coat is very dark, nearly black, rather tightly fitting and long, with the cape detachable. The trousers are dark blue, with a narrow red welt or cord let into the seam. This was originally introduced into military trousers to identify them, should they be unlawfully

disposed of, as the welt is not easily removed. Dress trousers have a broad red stripe. In like manner the buttons on the outer side of the military cuff were placed there anciently with the utilitarian motive of making the substitution of the cuff for the handkerchief uncomfortable. The ankle boots are shoes coming well about the ankle, like our own issue shoe. A "shoe" always means a low shoe, which explains Parkes' assertion that "shoes cannot be worn without gaiters." The ankle boots are exceedingly and apparently unnecessarily heavy, the sole being excessively thick. A pair weigh nearly five pounds, or not far from twice as much as our own. The leggings are of light leather and come up well toward the knee. They seem to be well thought of for marching, although officers when mounted for the field, and I think sometimes when shooting, prefer the "putties," introduced from India. These are more of the nature of wrappings than of gaiters. The helmet is identical with the insufferable black German head-dress worn by our own forces, differing only in the substitution of the crown for the eagle. The forage cap is the Glengarry or Scotch cap, which is vizorless and of cloth, and thus easily folded and adaptable to the head in bad weather. This is worn by all the British foot.\* The cross and crown in miniature are attached to it for the medical soldiers. Gloves are not worn on parade by enlisted men below the grade of sergeant. The uniform glove for officers is a tawny brown, except when a member of the royal family is present, when white must be worn. Chevrons are worn by the non-commissioned officers on the right arm only. The Guards wear one more stripe than the line, a sergeant's chevron consisting of four, and a corporal's of three sections. The distinctive mark of the Medical Staff Corps is worn on the right arm above the elbow. It is two inches in diameter, consisting of a white ground enclosed by a narrow yellow circle and bearing a red Greek cross. For privates the circle and the cross are worsted, for non-commissioned officers the circle is gold bullion and the cross is silk. This is ornamental as well as distinctive. A small and appropriate designation of similar size is earnestly advised for our Hospital Corps, in place of the exaggerated and unbecoming

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\*I believe that another pattern of fatigue cap has been adopted very recently (1894).

brassard with which our men are now enveloped. It is respectively suggested that if our Hospital Corps soldiers were allowed to wear a rectangle two inches square, enclosed in green, with the cross in white on a red ground, or in red on a white ground, they would be quite as distinctively and much less offensively marked than at present. The rectangle might be placed horizontally or obliquely.

Those articles not necessary for his daily use in the field, are known as the man's surplus kit, and are carried for him. The service kit is the clothes on his person and the necessary articles, the exact enumeration of which is difficult and not essential here.

For inspection in the ranks, the soldier is equipped with a waist-belt, sword, water-bottle, havresack, valise, and the necessary straps, and one ammunition pouch for bandages.

#### GENERAL DISCIPLINE.

The severity that formerly was supposed to characterize British military discipline, has been greatly meliorated in recent years, and although offences against order are promptly noticed, the penalties awarded are much reduced. Owing, it may be, to certain social traits, superficial obedience is prompt and praiseworthy. It is beside the purpose of this report to express any opinion upon the security of the deeper foundations of discipline under the present system.

Breaches of discipline are divided into offences and minor offences, and are noted on separate reports. Minor offences are disposed of by the company or the battalion commander or by court martial. A record of such action is entered on the defaulter sheets of the men concerned, and the men while undergoing punishment are known as defaulters. Soldiers are not confined for minor offences, such as absence from roll calls, overstaying a pass, or for slight irregularities in barracks. But while a man's case is pending he must not leave his barracks; he attends all parades, but is not for other duty. A drunken soldier is confined, but a soldier suspected of drunkenness may not be tested by drill or otherwise in order to ascertain his condition. Drunken soldiers are not to be examined until quite sober, generally twenty-four hours after confinement. All charges are investigated in the presence of the prisoner, usually at an

early hour of the morning, daily except Sundays. Medical officers commanding detachments may summarily reduce first and second class orderlies to lower grades, subject to the approval of the Principal Medical Officer. At Aldershot the medical officers commanding companies and the Depot exercise the same authority in this matter as officers holding similar commands in other branches of the service. A company commander may award minor punishment, not to exceed seven days' confinement in barracks. The commanding officer may award imprisonment not to exceed seven days, except for absence without leave, when it may extend to the length of the absence, not exceeding twenty-one days; deduction of ordinary pay, or in drunkenness a fine not to exceed ten shillings, and confinement to barracks, or extra guards and piquets. Drunkenness not on duty must be summarily treated, unless the man has been drunk on not less than four occasions within the preceding twelve months, and under certain other conditions.

The prisoner is brought before the commanding officer in the orderly room [commanding officer's office] and the witness makes a brief statement not under oath. Other witnesses are called if necessary, the man's record is examined, and the commanding officer at once announces his decision. A prisoner may be remanded for further inquiry, but his case must be continued daily. The prisoner may demand that the witnesses be sworn, or may demand trial by court, when the punishment exceeds certain specified limits. A commanding officer may summarily inflict punishment with hard labor for seven days, a fine not to exceed ten shillings for drunkenness, loss of pay for five days for absence without leave, or confinement to barracks for twenty-eight days. Extra guards or piquets may be ordered for minor offences connected with those duties. Confinement to barracks requires the defaulter to answer to his name at irregular hours, and to be employed at fatigue to the fullest possible extent, to relieve good soldiers. Punishment drill consists in marching in quick time, and is not instruction drill. It is not to exceed one hour on any one occasion. This summary dealing, as it is called, by the commanding officer is not to be confused with a summary court martial, which is a tribunal of the field.



In a large camp, like Aldershot, each corps, including the depot under discussion, has its own guard-house, which consists of a guard-room, a prison-room for the detention of men not disorderly, and cells for the seclusion of those requiring isolation and restraint. Ordinarily the guard-house cells are not used for sentenced soldiers. A provost prison is devoted to men sentenced, summarily or by court martial, to imprisonment not exceeding forty-two days. A military prison receives men convicted of grave offences involving disgrace, or those undergoing long sentences. A military convict is a man sentenced by a court martial to penal servitude, and is confined in a civil prison. The garrison and regimental provost prisons are inspected, and each prisoner visited daily by the orderly officer and by a medical officer, and reports are made to the commanding officer.

A defaulter book is kept for each company and one for each regiment, in which are entered all offences and the penalties inflicted, certain very minor conditions excepted. These entries are made and signed by the officers themselves. Every case of drunkenness must be entered. A uniform and convenient system of registration is prescribed. Deserters are not carried as such until after twenty-one days have passed. The punishments for military offences are graded and carefully prescribed in the regulations.

The Medical Staff Corps has its own guard-house and furnishes its own guard, although in common with that of all troops at Aldershot its guard duty is very light. The individual corps take care of their own sections of the large camp, and occasionally furnish the nightly patrols that enter the town. But the general order, outside of and when necessary within the regimental lines, is maintained by a special corps of military police, some of whom are mounted and some are on foot. As a consequence, the ordinary tour of guard comes about once in three weeks, and I have seen regimental returns that showed the men to have more than forty nights in bed. The guard maintained by the Medical Staff Corps serves the additional purpose of a school for recruits.

## COMPANY DUTY.

The distribution of duties among the non-commissioned officers differs from our own. There is no First Sergeant, in our sense. There is a Color Sergeant for each company of infantry, who more nearly than any other corresponds to our First Sergeant. But he is charged less with the direct administration of discipline than with the care of the pay and the messing accounts. He is invariably the Pay Sergeant, and on that account is never detached from the company. His connection with the colors is merely nominal and the title seems to be one of tradition. The regulations say "they have the honorable distinction of attending the colors in the field;" but they are not color bearers. In the Infantry the Queen's color and the Regimental color are ordinarily borne by the two senior second-lieutenants, although standards and guidons of Cavalry are borne by the troop sergeant majors. The drill regulations prescribe that the colors, each carried by an officer, are placed between the two centre companies with a sergeant between them and that two non-commissioned officers or steady men with a sergeant between them in the centre are in the rear rank. This constitutes the color party. Apparently the color sergeant is so denominated at this time because he may have been one of those sergeants; but it is manifest that all the companies cannot supply a sergeant with the color party at once. It is probable that at some time this association with the colors was more intimate, and that the name has been retained after the function has lapsed. The troop sergeant major has similar duties in the cavalry to the color sergeant in the infantry, although as just pointed out he actually carries the colors. Their principal duties are clerical, as aids to the company commander with the official papers. The duty sergeants go on for a week at a time, according to roster, as Orderly Sergeants. In like manner subordinate duties are discharged by Orderly Corporals, that is by corporals who are designated to oversee certain conditions of discipline for a specified period, usually a week. The Orderly Sergeants during their tour are charged with and are responsible for many of the duties that be-

long to our First Sergeants. In this way familiarity with forms, with papers and with the character and needs of the whole company is attained by all. While "orderly" is used in the same sense as with us, to indicate a private soldier doing some special duty, commonly in the nature of attendance, out of ranks, it also designates an officer or non-commissioned officer engaged in a stated duty in the nature of superintendence or control. Thus the Orderly Officer is the Officer of the Day, and the Orderly Room is the Adjutant's or the commanding officer's office.

#### PAYMENT OF TROOPS.

Notwithstanding the complicated system of accounts and the curious variety of minor stoppages enforced against the men, the companies are usually paid weekly by their respective captains. Payment has no relation to muster. In fact muster occurs only twice a year and at irregular intervals. That is to say the day for muster parade is fixed a short time previously by the commanding general, and is arranged so that it occurs once in each half year, always on the first day of the month unless that day should fall on Sunday, when it is on the second.

It is not necessary to explain the particulars of the payment. The captain keeps on hand sufficient cash, drawn from the paymaster, to whom he makes a monthly account of his disbursements, embracing a balance for each man and his own balance sheet, accompanied by the necessary vouchers. Notwithstanding nearly forty headings, the most of which are subdivided into columns for £, s, d, and the minute amounts involved, the general method seems to work satisfactorily. The paymaster does not ordinarily, if at all, make direct payments. The payments are weekly and the settlement is monthly between the captain and the paymaster, who allows or disallows the account. When a man is transferred to another company or regiment a State of Accounts, a separate document from his Military History Sheet, is made out.

The system of paying enlisted men without direct reference to muster, and at irregular and, if desired, frequent intervals, obtains in the United States Navy. The practice of both services illus-

trates the feasibility of small and repeated payments for our soldiers without necessary confusion of the accounts.

The rates of pay have already been noted. The Regimental Savings Bank will receive deposits for soldiers, on which interest is paid at 3.75 per cent per annum (9d to £1). These deposits may be drawn in whole or in part at any time. Interest is not paid on more than £30 deposited in one year, nor on more than £200 in all, but bona fide deposits will be received to any amount. I found however that men inclined to save were more disposed to use the Postal Savings Bank than this, partly from its greater convenience, but chiefly because of a natural reluctance to have their small money matters kept in a way involving official scrutiny and a certain degree of publicity.

British officers do not draw their pay directly from the Pay Department, but each regiment or corps has as agents a firm in London whose relation seems to be that of private bankers, at least for this purpose, to all the officers of that corps. The officers draw upon these agents, and the Pay Department pays the agents and not the officers.

The pay of medical officers gradually increases from £200 a year when first commissioned, to £2 15s a day for the highest grade. Gratuities on downright severance from the service, ranging between £1250 and £2500, and on retiring "half-pay" from £1 to £2 a day, according to length of service, rank and other conditions, are a part of the compensation.

#### RATIONS AND MESSING.

The ration supplied by the government is: bread 1 lb, meat (beef or mutton) 12 oz., including bone, uncooked. All other food is supplied by the soldier himself. This is not a voluntary and irregular contribution, but it is derived from a formal daily stoppage on the pay-roll, the money never having reached the soldier's hands. This stoppage ranges from 3d to 4d, according to corps. In the Medical Staff Corps it is 3 1-2d a day, which is nominally equivalent to 7 cts. although its purchasing power is greater. Ordinarily this is devoted to groceries, which are purchased from the grocery shop of the Regimental Institute, a modification of the Canteen.



The Daily Messing Account is an official book used by each company, in which are entered the quantities and cost of all articles purchased. The delivery is made at an hour fixed by the commanding officer, when the sergeant cook, orderly corporal, and company cooks are present to examine and receive the supplies. The orderly officer also attends, to see that they are of proper weight and quality and are correctly entered. This issue and receipt is signed by the canteen steward, the non-commissioned officer in charge of rations, the color sergeant, and the company commander. (The commanding officer's signature verifies the cost and distribution.) A scale for messing, and a specimen mess account, printed on the first pages of the book for the guidance of the men, and therefore presumably a fair representation of the daily food, are reproduced for convenient comparison with our own allowance. This is in addition to the free bread and meat.

*Scale of Messing for the Guidance of Color Sergeants.*

Coffee.....	2½ oz. to 10 men (one meal).	
Tea.....	1 oz. to 7 “ “	
Sugar for tea.....	7½ oz. to 10 “ “	
“ “ coffee.....	1 oz. per man.	
Cheese.....	1 oz. “	
Butter.....	1 oz. “	
Jam.....	2 oz. “	
Golden syrup.....	2½ oz. “	
Brawn.....	2 oz. “ (breakfast and supper).	
Corned beef.....	2 oz. “ “ “	
Potatoes.....	14 lbs. for every 12 men (dinner).	
“ “ .....	28 lbs. for supper per company.	
Vegetables for soup.....	4 lbs. .... “ “	} Of 60 men.
“ “ for supper.....	3 lbs. .... “ “	
Onions for soup.....	3 lbs. .... “ “	
“ “ for supper.....	3 lbs. .... “ “	
Salt.....	2 lbs. .... “ “	
Pepper.....	3 oz. per diem “ “	
Mustard.....	3 oz. “ “ “	
Currie Powder.....	5 oz. for soup, etc. “	
Split Peas for soup.....	6 lbs. .... “ “	
Lentils, “ “ .....	6 lbs. .... “ “	
Barley, “ “ .....	6 lbs. .... “ “	
Herrings.....	1 per man.	
Flour for soup for thickening....	1 lb. per diem per company.	
Celery seed, for soup.....	1 packet.	
Milk.....	1¼ pints for every ten men per meal.	
“ for tripe stew.....	2 quarts per company.	
“ for porridge.....	1 “ for 15 men.	
Oatmeal.....	1 lb. for 10 men.	
Golden syrup for porridge.....	6 lbs. per company.	
Bacon.....	2 oz. per man.	
Eggs.....	1 per man.	
M't'n or P'rk ch'ps, or fri'd liver.	¼ lb. per man (breakfast and supper).	

*Specimen Daily Messing Account.*

Company Mess...	60		
Sergeants "	3	Meals.	Description.
Band "	6	Breakfast, ....	Coffee, Fried Liver and Bacon.
Drummers "	3	Dinner, ....	Lentil soup, Turkish pillau, Potatoes.
Married "	4	Tea or Supper ....	Tea and Pie.

Total on ration..76

Balance.	Cr.	Brought forward	£0 0 0
60 men in mess at 3d.....			0 15 0
Money from Refuse fund.....			0 5 3
Total.....			£1 0 3
Deduct debt.....			£0 0 0
To be expended.....			1 0 3
Expended.....			13 8 ¼
Balance .			6 6 ¾

	Quantity.	Rate.	Breakfast.	Dinner.	Tea.	Total.
	lb. oz.	s. d.	s. d.	s. d.	s. d.	£ s. d.
Bacon.....	3 12	0 4½	1 4¾	0 0	0 0	0 1 4¾
B'k'g p'wd'r, pkt.						
Barley.....						
Brawn.....						
Bread, loaves....						
Butter.....						
Cabbage heads...						
Cheese.....						
Cocoa.....						
Coffee.....	0 15	0 10	0 9½			0 0 9½
Currants.....						
Curry.....						
Fish (Dried Ling)	6 0	0 3			1 6	0 1 6
Flour.....	1 0	1½		0 1½		0 0 1½
Jam.....						
Lard.....						
Lemon peel.....						
Milk, 7½ qts.....		0 2½	0 9½		0 9½	0 1 6
Mustard, per lb...	3	0 11		2		0 0 2
Oatmeal.....						
Onions.....	6 0	0 1		0 3	0 3	0 0 6¾
Pepper, per lb....	0 3	1 2		2		2
" cayenne..	0 ½	2 8		1		0 0 1
Pickles.....						
Potatoes, 7 stone.		4½		1 10½	0 9	0 2 7½
Raisins.....						
Rice.....	6 0	0 1½		0 9		0 0 9
Salt....	2 0	0 ½		0 1		0 0 1
Spice.....						
Split peas, lentils.	6 0	0 1½		0 7½		0 0 7½
Suet, Dripping ...	2 0	Free	Saved in cook-house.			
Sugar.....	6 9	0 2½	0 9¼		0 7¼	0 1 4½
Tea.....	0 8¾	1 6			0 9¾	0 0 9¾
Vegetables, mixed	4 0	0 0¾		0 3		0 0 3
Herbs, 1 packet..		0 1		0 1		0 0 1
Total from Refreshment Department			3 9	4 6	4 8¼	0 12 11¼
Half a bullock's liver .....	7 0	1 6	0 9			0 0 9
Totals.....			4 6	4 6¼	4 8¼	0 13 8¼

Besides the free ration and the ration gained by the stoppage, it seems to be expected that the men will buy outright at least moderate amounts of other food, such as bread, cheese, and preserved meats. It is probable that more beer, under which term ale and porter are included, is drank than would be the case were the ration fuller.

The cooking for each battalion, is superintended by a sergeant cook who has passed through the instructional kitchen at Aldershot. When appointed he must be a non-commissioned officer of good character and intelligence, who has at least five years to serve. Under his orders is placed one cook for each company, a private who is changed only at long intervals or for misconduct. An assistant cook, to be changed weekly, may be detailed by the captain if necessary. A second cook, not lower than a corporal, may be instructed at Aldershot as an alternate to the Sergeant Cook. When the latter is on duty, the former serves in the ranks. There is a special class for cooks in the Medical Staff Corps at the Cambridge Hospital, Aldershot.

All the cooks are integral parts of the corps for whom they work. A monthly prize of 5s is given to the company cook who produces the best cooked and best served meals. This is awarded by the commanding officer on reports made during the month of the comparative excellence of meals prepared in the various companies, the notes being made at the time in a book kept for that purpose. The name of the prize winner is published in regimental orders. Special attention is now paid to the saving and the economical use of parts formerly thrown away; particular stress being laid on the saving of dripping, and its use in the cook-house. A fund is accumulated by the disposal of all the actual kitchen refuse and garbage, and this is divided between the companies in proportion to their strength, and it may be used for such purposes as the purchase of canvas fatigue suits for the cooks, for washing them, and so forth. There appears to be nothing corresponding to our Company Fund.

The kitchens are sometimes in and sometimes adjacent to the barracks. For the new barracks heretofore described, the kitchen

must be completely detached. In some of the cavalry barracks, the kitchen is on the same floor with, and in the next room to the troop stable. For the Medical Staff Corps they are in frame buildings similar to, and a few yards in rear of those occupied by the men.

Privates mess in the barrack rooms, on standing tables in the passage way between the rows of beds. The food is served in common and divided proportionately, except the bread. The bread allowance is an individual one made daily. Each man has the same quantity as his comrade, which results in waste in some instances and in insufficiency in others. I saw no example of garrison or regimental mess, in our sense. A regimental officer inspects the kitchens and appliances daily and the barrack rooms during breakfast, dinner, and evening meal hours.

Notwithstanding the privates and corporals mess in what must be regarded as an uncomfortable and unsatisfactory manner, and with a very moderate table, the sergeants live in comparative luxury. That "a sergeants' mess will invariably be formed if practicable" is a regulation, non-compliance with which requires special explanation. According to my observation, that mess was a comfortable club in a detached building, where the sergeants off duty find acceptable recreation rooms as well as a table distinct from their subordinates. The fundamental principle seems to be that of reserve as an element of discipline.

Officers' Classes of Instruction in judging the quality of provisions and forage are established at Aldershot. Four courses of a fortnight each are held in the year.

The instructional kitchen at Aldershot for cooks, contains, besides the ordinary garrison apparatus, working models of various forms of field kitchens in trenches and otherwise. For troops not in constant practice in the field, this is capital preparation.

#### FIELD RATION.

For convenience, the composition of the field ration is introduced here. In active field service the whole ration is supplied outright by the Government. It varies with the climate and the campaign,



but the standard schedule is as follows: Meat, fresh, salt, or preserved, 1 lb. Bread, 1 1-4 lb., or Biscuit [hard bread] 1 lb., or flour, 1 lb.; Tea, 1-6 oz.; Coffee, 1-3 oz.; Sugar, 2 oz.; Salt, 1-2 oz.; Pepper, 1-36 oz.; Fresh vegetables, when procurable, 1-2 lb., or Compressed vegetables, 1 oz. Also, when ordered by the Commanding General on the recommendation of the medical officer, Lime juice, 1-2 oz., Sugar, 1-4 oz., Rum, 2 1-2 oz.

#### REGIMENTAL INSTITUTE.

This is a recent extension of the older but comparatively modern Canteen system. It is for the exclusive benefit of the troops, and is divided into the Refreshment and the Recreation Departments. The former is subdivided into the Canteen, the Grocery Shop, and the Coffee Room. The theory of the Canteen is that it is a well-conducted tavern for the sale of wine, malt liquors, aerated waters, bread, biscuit, cheese, tobacco, &c. No spirituous liquor is allowed to be sold at Home stations. No liquor of any kind may be sold before 12 M. nor after tattoo, nor on Sunday during the hours of divine service. But excepting those hours, the bar is open on Sunday as usual. This is essentially a drinking-place, established in recognition of the national prejudice that stimulants are a quasi necessity, the drinking custom that finds its apotheosis in the elevation of successful brewers to the peerage.

The Grocery Shop has no connection except that of regimental management with the Canteen, and where practicable it is in a separate building. No liquor and no poisons may be sold there. Simple medicines, approved by the medical officer, may be sold, and any other article at the discretion of the commanding officer. This may be opened when the commanding officer directs, and it is closed half an hour after tattoo.

The Coffee-Room is associated with but is distinct from the grocery. It is to be divided from it by a partition, if a separate room cannot be had, and by preference it is an adjunct to the Recreation Room. Its purpose is to supply tea, coffee, cocoa and other non-alcoholic drinks, soup, fish, eggs, bacon, cooked and preserved meats,

&c. The regulations require it to be opened at an hour that will enable men to procure refreshments before the morning parade, which is a practical and significant commentary on the sufficiency of the ration. Men joining or leaving, who are not on rations, get a free meal from the Regimental Institute at its expense.

The Recreation Room is to have two apartments set aside for it when practicable, one as a reading room and one for games. A coffee room is to be maintained when possible, but no beer nor other alcoholic drink may be introduced under any pretence. Fuel and light are supplied by the Government, and the rooms are maintained partly by the Government and partly by very moderate subscriptions stopped against the pay of the men. These may not exceed 3d per month for privates and 6d for sergeants.

Besides these technical Recreation Rooms, an Amusement Hall, ranging from a narrow platform from which amateurs execute songs and dances to a well-appointed theatre where professionals are engaged to give formal plays, is generally attached to the Canteen, which pays the expense. The Canteen of the cavalry brigade in the South Camp at Aldershot secures elaborate performances of a congenial grade, free to all the cavalry soldiers and their families. In these rooms beer and tobacco may be used, as in the civil Concert Halls. The more thoughtful officers are divided in their opinion as to whether it is desirable to make the drinking places attractive by such adjuncts, or whether by banishing all beer from the latter those men who will drink would thus be indirectly excluded and driven to objectionable civil resorts.

The arrangement of the military day is such as to give both officers and men the greatest amount of leisure without interruption. Thus, at Aldershot the Medical Staff Corps recruits are given six hours' work a day, but ordinarily that ceases at 2 o'clock, and the last hour's drill is under a sergeant. Unless on some special duty, as Orderly Officer, Guard, or the like, the working day ceases for officers at 1 P. M. There are no afternoon parades, and the men's Tea is served at 3:30 P. M. As there is no general roll-call at Retreat, as the "last post" of Tattoo is at 10 P. M., and as many good conduct men and non-commissioned officers are allowed

to be absent until midnight, this arrangement gives very wide liberty of movement. But it also leaves a very long interval between what is necessarily a light meal and breakfast, and stimulates resort to some branch of the Regimental Institute. There is, however, the very excellent regulation that regimental arrangements are to be made for issue in the night to the guard of a cup of hot coffee from the Canteen or the Grocery Shop.

#### POCKET LEDGER.

On joining, every soldier is supplied with a Pocket Ledger resembling but much more elaborate than our Hand Book. It folds flat within a flexible waterproof cover, when it may be tied by an attached tape. This book contains a military description of the man, a record of his service abroad, his changes in rank, his good conduct pay, his campaigns, actions and medals, his classes of instruction, marriage, children, wounds, certificates of education, cause and date of discharge, all these entries being verified by an officer's signature and some of them made in the officer's own hand-writing. The alleged object for keeping these is that the soldier may secure a proper settlement of his accounts and may establish a claim to such benefits as may be awarded men when discharged. I do not understand that this may supersede the Military History Sheet, or that in case of discrepancy it would be preferred to it. It seems to entail a large amount of unnecessary writing, certainly viewed in relation to our own service, for whose application these observations are intended. It also contains a list of next kin for four removes and their residence. This is corrected annually about the first of January. There are also printed extracts from the regulations affecting discipline, and forms of wills suited to various contingencies. It further contains the man's clothing account by months and an itemized account of issues and withdrawals, and his measurement, all for ten years and every entry certified by an officer. The measures are taken annually. The object of this is not plain, except that it may afford an indirect guide for the issue of clothing. There is also a place for the monthly statement of his Savings Bank account for the same decennial

period. The statistical part of the book, that is the part relating to pay and clothing, may be withdrawn when filled and other pages introduced. The soldier's religion is entered in the Pocket Ledger, and he has a formal opportunity to change his religion and to make a new entry once a year.

What is ordinarily spoken of as the soldier's discharge is really, with men of less than twelve years with the colors, a transfer to the Reserve. It is from these men that England expects to fill her ranks in war. The men of the Medical Staff Corps go to its Reserve. How far this expectation will be realized can only be determined when the emergency arises.

Upon leaving the colors, the soldier is given two certificates: one of transfer (or of discharge) and one of character, unless discharged dishonorably. There are ten different expressions for character, from "Exemplary" to "Very bad," including such as "Formerly good," "Latterly bad," one of which must be used in the description. Any special qualification for civil employment is also entered immediately below the character, unless that is "Bad" or "Very bad." Men specially deserving of civil employment, whom commanding officers wish to bring to the notice of the National Society for the employment of such men, will be given an additional certificate to that effect; and commanding officers are responsible that only men who are in every respect trustworthy and deserving of employment receive it.

With the discharge (or transfer) is given a parchment envelope for its better preservation. The advantage of that for men who usually have no facilities for the care of documents is obvious, and its adoption is recommended.

#### OFFICERS COMMANDING DETACHMENTS MEDICAL STAFF CORPS.

In closing the subject of the Medical Staff Corps as an organization, I add these memoranda pertaining to the specified duties of the commanding officer of a detachment.

If, as would usually be the case, the medical officer is in charge of a hospital, he is responsible for the systematic training in hospital duties of the officers of the medical staff and of all the mem



bers of the Medical Staff Corps detachment. Besides the practical training, he is required, either directly or by a representative, to hold classes of instruction in the duties they may be called upon to perform under any circumstances. He arranges for the daily inspection of the non-commissioned officers and privates at such a morning hour as may be convenient, at 8:30 A. M., at 2 P. M., and at tattoo, to ascertain that all are present, clean, sober, and properly dressed. Residence of the detachment within the hospital does not appear to be contemplated. No other parades or inspections will be held without his sanction. He holds such inspections, drills and parades as necessary. He frequently inspects those out of barracks. Monthly or more frequent inspections of equipments, clothing and necessities are made by the medical officer, who is responsible to the Principal Medical Officer that such are kept complete. He is required to give medical officers under him every opportunity of acquiring knowledge of hospital administration, and of the internal economy and discipline of the Medical Staff Corps. With this view the junior medical officers will, as a rule, invariably be present when prisoners are dealt with, and will be examined weekly by the medical officer in command, or by a deputed officer of rank, as to their knowledge of the various regulations affecting their duties. Very minute instructions are in force as to forwarding to the Principal Medical Officer and noting on the proper forms the action by summary award or by the various courts in the case of the men of the Medical Staff Corps. A British soldier may be tried by a General, District, Field, Regimental, or Summary Court Martial, or may be dealt with by summary award. The medical officer is responsible that the weekly estimate for funds is forwarded in time and that the detachment is paid in the presence of an officer. He appoints a qualified non-commissioned officer as Pay Sergeant. In general terms he is responsible that the whole system of accounts as applied to the individual is carefully carried out, and that all of the numerous papers, unnecessary to be rehearsed here, that mark and guide the soldier's life are properly filled in and filed. Fourteen kinds of books and forms are necessary for the administration of a de-

tachment. The medical officer in command forwards all recommendations for advancement of privates to 1st and 2d class orderlies to the Principal Medical Officer, by whom they are appointed. Only privates of good character showing exceptional aptitude as nurses or cooks may be recommended as 1st Class Orderlies, and 1st Class Orderlies are not to be employed in other capacities. A non-commissioned officer reduced becomes a 2d Class Orderly, and when reduced and imprisoned a 3d Class Orderly. Every facility is to be given non-commissioned officers and privates to become compounders. All recommendations for promotion in the Medical Staff Corps are to be made by the Medical Officer in his own handwriting, with a full statement of the reasons. Privates must have a second-class certificate of education and one year's service, including six months in the corps, before permission is given for examination. Only such men are to be recommended as are likely to become good non-commissioned officers. As elsewhere remarked, the doctrine of graded duty with consequent responsibility and reward runs through the whole scheme. It is encumbered by many formalities not necessary in our service, but the central principle is correct and should be accepted in our practice.

#### FIELD SERVICE.

Service in campaign is provided for by the mobilization of Bearer Companies of the Medical Staff Corps, by an Ambulance Train, by a succession of Hospitals from the base to the fighting line, and by medical officers attached to the military organizations.

#### MATERIAL AND EQUIPMENT.

The panniers and other cases employed in the British service, examples of which were introduced to our army by Col. Vollum, Medical Department, that with modifications have been adopted by us, do not require the minute description that formerly would have been necessary. The Medical Field Panniers are: No. 1 Medicine Pannier. It weighs about 90 lbs. and contains: (1) A variety of medicines in moderate amounts and in the older gross forms; (2) In two drawers, stationery and minor appliances,

as needles, camel-hair pencils, stethoscope, hypodermic syringe; (3) Medicated gelatine discs and lamels, the lamels being for internal use and the discs for hypodermic and ophthalmic use, and syringes and candles, a set of Duncan's splints (light reed extension), and a case of instruments. No. 2 Pannier. It weighs about 80 lbs. and consists of two baskets. One of these carries bandages, lint, tourniquets, needles, plasters, and sponges; the other, Esmarch triangles, extract of meat, an *Ætna* and spirit, dressing basins and urinal (rubber), gauze, and a lantern and candle. All the appliances are antiseptic. One tin holds catgut drainage tubes and plaster, another more bandages. There is a Reserve Medical Pannier weighing 84 lbs. That, as its name implies, contains supplies from which to replenish the Nos. 1 and 2. There are also two "special" Surgical Panniers, known as 1 and 2, each weighing 84 lbs. These contain anæsthetics, dressings, other appliances and operating instruments. A Field Medical Companion contains a few of the simpler medicines and appliances for immediate use. This is a working assortment arranged for convenience of handling, and it weighs about 11 lbs. On the march it is carried with No. 2 Pannier. This Companion is also used under many other circumstances, as at the Inspection Room, on shipboard, and with detachments. The Surgical Havresack weighs about 5 lbs. and contains specification tallies, solution of morphia for injection, ammonia, antiseptic dressings, adhesive plaster, sponges, tourniquets, wax candle and matches, wire arm splints, and a dressing-case. The dressing-case holds a knife, scissors, forceps, pins, needles and thread, &c.

The Medicine Pannier carries 1-2 pt. of distilled water, and a graduated horn cup. Both may be serviceable in the field. The *Ætna* is a metal contrivance in the nature of a portable spirit furnace, that shuts up very compactly when not in use, and by which hot water and soup may be prepared with very little trouble or delay. It is worthy of adoption. In other respects I regard our new chests as better supplied, both as to the character and the form of the contained articles.

## MEDICAL SERVICE.

For troops in active service a medical officer is attached for the campaign to each regiment, battalion, troop, or company of Royal Engineers. He renders such temporary professional assistance to the disabled as may be required in camp, on the march, or in action. He is a staff officer of the commander of the unit, is his adviser on sanitary matters, and is under his orders, but he receives instructions from and is at the disposal of the Principal Medical Officer of the division. For the larger commands he has a corporal, a private as an orderly, and a private as a personal servant, taken from the ranks of the command. When with a troop, battery, or company, no corporal is furnished. With regiments, &c., he has field medical and surgical panniers, a medical companion and water-bottle, a surgical havresack, and a circular tent; with smaller bodies, the companion, water-bottle, and havresack. His records are a diary entered in a blank book. He draws this property before taking the field and turns it over for transportation with the regimental baggage, but it remains in his charge and the commanding officer must see that it is always at his disposal. The regimental stretcher bearers, two to a company, are placed at his disposal when an action is anticipated. It will be observed that the regimental medical officer derives no aid from the Medical Staff Corps, but depends entirely upon the men of the active command. The sick are sent to him with the usual duplicate company sick reports. If a man is sent to hospital, one copy of the sick report is sent with him and the other is returned to the commanding officer, with the disease and the destination marked upon it. The medical officer enters in his diary the names, diseases, and disposition, but makes no other report unless required by the Principal Medical Officer of the division. That is simplicity itself.

The regulations prescribe that when an action is expected, the regimental bearers transfer their rifles and valises to the carts, take out the stretchers, and become at the medical officer's disposal for service with the wounded. I do not know that this has yet been tried in actual war. Two probable difficulties occur to me:



(1) With a large body of advancing troops the wheeled transportation would be out of reach in the rear; and (2) the great unwillingness of all commanding officers to spare effective men from the line of fire. This would increase in proportion to the apprehended severity of the engagement. These regimental bearers, who are not to be confused with the bearer companies, having reported to the medical officer, proceed under his direction to the scene. The orderly accompanies the medical officer, and the corporal remains with the panniers. This implies that the transport has been brought further to the front than is probable in life. Should the attempt be made in our service to keep the regimental medical supplies up to the line of actual contact with the enemy, or at all near it, I should advise the use of pack animals. Wheels would be efficient as long as daily camps are made; but in moving out to fight, the corporal and his panniers would be left behind. After the battalion medical officer has given first aid to such cases as are suitable, the wounded of the fighting line are conveyed to the collecting station by his regimental bearers alone, or as succoured by the bearer company. But the medical officer and the regimental bearers are not to lose touch with their own corps, to carry the wounded long distances, nor to attempt to pass to the rear of the collecting stations. From these they at once return to the fighting line. The knowledge that a medical officer is with them, increases the morale of the command. In practice, unless fighting under general cover, I doubt whether it will be physically possible for any medical officer to reach many of the wounded where they fall; and an advancing line will very rapidly leave the medical staff in the rear, unless that staff passes the disabled without assistance.

The theoretical composition of a British army in the field is a certain number of Army Corps, any one of which may be an independent army. An army corps consists of three divisions, and a reserve of artillery and engineers. The two latter are styled the corps troops. A division of infantry in the field consists of two brigades of infantry, one squadron of cavalry and three batteries of artillery. With these as "divisional details," are one divisional Reserve ammunition column, one Field company of engineers, one company Army

Service Corps, and one Field Hospital in reserve. A brigade of infantry consists of four battalions of infantry, two machine guns, one company Army Service Corps, one Bearer Company, and one Field Hospital.

An army corps thus constituted has a strength of 35,110, and has 10 field hospitals: that is, one hospital for each of the six brigades, one in reserve for each of the divisions, and one in reserve for the corps. There are six bearer companies to the corps, besides the regimental bearers. A cavalry division, which may or may not be attached to any corps, consists of two brigades. Its strength is 6,705, with three field hospitals, one for each brigade, and one in reserve for the division. The hospitals are designed for one hundred men each, and temporary provision is thus made for 1,000 infantry, or rather less than 3 per cent., and for 300 cavalry, or about 4.5 per cent. Were the whole force simultaneously engaged, this would probably be insufficient unless only severely wounded men were admitted. Each army corps, on taking the field, would have with it ordinarily, 40 medical officers, exclusive of the administrative officers and of those attached to the bearer companies and to the field hospitals.

The division is the field military unit, and is the one to and from which the formal medical reports are made. But the brigade is the subsidiary unit, with which bearer companies and field hospitals are allied. If possible, the bearer company and the field hospital and their transport sail in the same vessel and with the brigade to which they are attached.

Every soldier, before taking the field, has a descriptive card sewn into his clothing.

#### BEARER COMPANY.

A bearer company for war is organized from the Medical Staff Corps and its Reserves, and consists of 3 medical officers, 1 warrant [non-commissioned staff] officer, 6 staff sergeants and sergeants, 1 bugler, and 53 rank and file. The latter comprise 6 corporals, 8 privates, 3 privates as cooks, 32 as bearers, 3 as servants, and 1 supernumerary, total 64. One public and three private riding horses accompany the company. Attached to the bearer company are the

following transport troops, taken from the Army Service Corps: 1 officer, 1 sergeant, 2 artificers, 1 bugler, 38 rank and file. The latter are 1 corporal, 1 second corporal, 29 privates as drivers, 1 bat-man, 1 cook, and 3 supernumeraries. There are 5 public riding and 58 draught horses with the company. It is important to observe that all the drivers and all the men associated with the transportation come from the Army Service Corps, and not from the Medical Staff Corps, although they are controlled by the latter when attached to it. In effect, therefore, a Bearer Company has the value of 4 officers, 101 men, 9 riding and 58 draught animals.

The attached transport is divided into 1 2-horse cart for supplies, 1 for tents and 1 for water, 10 ambulance wagons, 1 general service [army] wagon for equipment, 1 for medical stores, in all fifteen (15), supplied by the Medical Department, and one wagon for the use of the Army Service Corps. The last wagon and all the drivers and horses come from that corps.

The bearers of the Medical Staff Corps company are taken from its reserves. In action this company is divided into two stretcher sections, each of 1 sergeant and 16 privates, both under one medical officer, 1 sergeant to remain at the collecting station, and 5 corporals and 5 privates for the ambulances, and 2 medical officers, 4 non-commissioned officers, 1 bugler, and 4 privates, including a cook, for the dressing station. The quartermaster-sergeant in charge of the property, 2 privates, cooks for the company, the officers' servants, and 1 supernumerary, are in rear of the dressing station; total, 61 enlisted men.

The bearer companies are charged with the succor and collection of the wounded on the field, and they carry them to the dressing stations and field hospitals. They also pick up and carry to the field hospitals with the wounded their kits, arms, accoutrements and ammunition. The companies are associated with and encamped close to the field hospitals, in order to assist in pitching the field hospital tents, in dealing with the disabled, and in providing hospital guards. But throughout the campaign "the bearer company organization will be maintained separate and distinct from the field hospitals." The common superior appears to be the Principal Medical

Officer of the division. Although attached to each brigade, they are not a part of it, but are entirely at the disposal of the division authorities, who will detach or mass them as required.

The field hospitals have a light equipment, to enable them to move with the troops, and all the sick and wounded from the front pass through them. Each is arranged for 100 beds and has belonging to it 4 medical officers and 1 quartermaster, 1 warrant [n-c-s] officer, 7 sergeants and 32 rank and file. The sergeants are 1 ward-master, 1 steward, 2 compounders [dispensing stewards], 1 pack-store keeper, 1 cook, and 1 supernumerary. The rank and file are 4 corporals, 1 each as steward, clerk, cook and supernumerary, 14 privates as ward orderlies, 1 each as cook, pack-store keeper and messenger, 2 as washermen, 5 as servants, and 4 supernumeraries: total enlisted, 40. One public and 5 private riding horses accompany the hospital. Attached to it from the Army Service Corps are 1 warrant and 3 non-commissioned officers, 1 farrier, 18 privates as drivers, 1 as cook: total enlisted, 36, with 3 riding and 36 draught horses. The field hospital is susceptible of division into halves, the detached half taking with it the sergeant major as an acting quartermaster, and 19 other enlisted men.

The transport attached to a field hospital consists of 4 2-horse carts, one each for supplies and tents and two for water; 4 4-horse wagons for medical and surgical equipment; and 2 4-horse wagons for baggage and reserve rations, all supplied by the Medical Department, and one 4-horse wagon from the Service Corps for its own use.

It will be observed that for both the company and the hospital transport, 4-horse teams are provided with two drivers each. Apparently the wheel driver sits on the box seat, the lead driver rides the near leader, and "the wagonman marches with the wagon and puts on the drag when required." We should hardly require three men to a wagon. The wagon with its own equipment, but unloaded, weighs 2,454 lbs. A bearer company wagon for stores carries 1,577 lbs. contents, total draught 4,031 lbs. The weight of the other loaded wagons ranges from 3,713 to 4,102 pounds. (Our own 6-mule army wagon weighs about 2,100 lbs., and may carry when loaded, 4,000 lbs. It is driven from the near wheeler. The



4-mule escort wagon weighs 1,600 lbs., and may carry nearly 3,000 lbs. It is driven from the box. There is no specified lading for either, which must depend on the country in which operating.)\*

These wagons are so packed as to be capable, without re-arranging their contents, of establishing two independent hospitals of fifty beds each. The wagons for field hospital stores are divided into three compartments, with one fixed underneath, which are fitted with certain boxes, some of which are again subdivided. The regulations give plans of these and minute directions for packing the contents. Great ingenuity and care have been displayed in utilizing the whole space. The objections to such detail, which I fear would be fatal in the field, are that an unfitted wagon cannot replace this in emergency without loss or damage of material, and that with a fitted wagon it requires a packer skilled in the work to understand where to find, and especially where to stow, the various items. Untrained men, even with the regulations before them, certainly cannot pack this wagon under the working conditions of the field.

No part of the transport, whether wheeled or pack, furnished bearer companies or field hospitals, may be used for any other purpose or be taken from them, except by authority of the commanding general. On the march the field hospitals follow the bearer companies.

The companies and the hospitals are arranged on a basis of

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\* Our own army wagon, although excellent and an evolution from extensive experience in the civil war and on the plains, is susceptible of improvement. As very well observed by 1st Lt. L. D. Greene, R. Q. M., 7th Infantry, in his report on the Sioux campaign of 1890-'91, this wagon body has its centre of gravity too high, a special fault when loaded with bulky baggage for side-lining roads; it does not track on country roads; it is coupled unnecessarily short for our ordinary service; and the body might well be eighteen inches longer, thus making the load less top-heavy. As shown by experience with native Indian freighters, three light two-horse wagons are more adaptable to the requirements of the frontier, at least when the trails are rough or the rivers are covered with weak ice, and the loss of one of these is by no means as inconvenient as the destruction or breakage of a large wagon. The only additional expense in their operation would be in the hire of drivers, where civilians are employed.

The comparative ease of movement of such lighter transportation makes it well adapted for hospital trains that should keep up with the troops.

brigades, but they are under the control of the Principal Medical Officer of the Division, and are generally referred to as the Division Hospital. In practice, each brigade hospital would probably be regarded as a section of the division hospital, but would make its own reports.

In establishing a field hospital, advantage is to be taken of suitable buildings, tents being pitched when such are not available. The tents for field hospitals are circular with low upright walls, the roof converging to a central pole. They remind one of a magnified "modified Sibley." The weight of each, dry, is, old pattern, about 75 lbs.; new pattern, 100 lbs. Each tent will hold four patients. Thirty tents in all are carried for the hospital. Two or three times as many well men are put in such tents, of which eight are carried for the officers and men attached to the hospital, and as many for the bearer company.

On lines of communication, when buildings and circular tents are not available, the hospital marquee is used. This is a heavy rectangular wall tent with a sloping roof, 30x15 ft. at base, wall 5 ft., height to ridge 15 ft. A waterproof floor is issued with it. It accommodates ten patients, but it weighs 600 lbs. when dry, and is cumbersome and difficult to pitch. The *tente d'abri* is not used at all.

In my judgment our system of tenting in all its particulars, whether considered for shelter, artificial warmth, convenience of transportation, or general adaptability to the requirements of campaign, has nothing to acquire from that of Great Britain.

The field hospital is the first place to which the daily sick are sent, only the most trivial cases being left with the regiment. All the cases not likely to be fit for duty soon, if they would not suffer by removal, are transferred as soon as possible to hospitals on the line of communication. The regimental medical officers are cautioned against passing to the field hospitals men not requiring hospital treatment, and at the same time against detaining at the front men who are really sick. The policy of detaching the sick as completely as possible is steadily pursued. Before an action all patients that can be moved are sent to the rear, but when the number of sick

and wounded, the want of transport, or any other circumstance prevents the removal of a field hospital, it ceases to be such, and becomes one of those on the line of communication, its place being supplied by a field hospital in reserve.

### IN ACTION.

The battalion (regimental) medical officers and their two bearers per company are already on the field and are presumed to have secured their own stretchers from the transport. A medical officer and two stretcher sections (eight stretchers) from the brigade bearer company also go out to collect the wounded. Two of the four bearers carry the stretchers; the other two are supplied with the surgical havresack and a water-bottle, and are charged with carrying the arms, accoutrements and ammunition of the wounded to the collecting station. The four medical officers of the battalions (regimental) are supposed to have already applied such first aid as is possible. The collecting station is in charge of a sergeant who has a few first dressings, and is as near the line of battle as is consistent with safety. It is under shelter if possible. The ambulances are divided into a first and a second line, and those from the first line run between the collecting and the dressing sections, and on no account are to pass beyond the latter during an action. Each ambulance is accompanied by a corporal or a private of the bearer company. The dressing station, if possible, is out of fire and is to take advantage of water-supply and of buildings; but the collecting and dressing stations are never to be far apart, and under some conditions they may be combined. Before the search for wounded is abandoned, all woods and ditches are systematically examined, and lanterns form part of the equipment of a bearer company for such work in the dark.

This schedule contemplates but a single collecting station for a brigade of four battalions, which with the modern formation will occupy a wide front. In practice however it will probably be found that each battalion medical officer will have established a collecting station of his own, before the bearer company can have reached the field. Almost certainly these depots of severely wounded

will be a series of temporary refuges behind natural obstacles, from which the lines of transfer will converge to a dressing station, not necessarily equi-distant, but established with primary reference to a road to the rear, and these temporary refuges will change with the progress of the engagement. It will also be found that many of those wounded in the upper extremities, or with flesh wounds, will not only avoid these rendezvous, but will drift past the dressing station itself in search of the more permanent repose and greater safety of the field hospital.

The theoretical constitution of a dressing station, which involves the use of an operating tent (circular) if no suitable building is found, has already been explained. Two medical officers and a few men, including a cook, constitute the force here. Beef tea and similar stimulants are prepared, and more officers and more men may be drawn from the field hospital should the pressure of work be great or the distance considerable. When dressed, the wounded are placed in the ambulances of the second line and sent to the field hospital. The character of the operations at the dressing station depends upon circumstances, but it is understood that the place is as the name indicates, one where wounds are to be dressed only, and everything that can be deferred without harm to the patient is left to be done at the hospital. It may happen, however, that the dressing station shall ultimately become a section of the field hospital itself. The route to the dressing station and to the hospital is indicated by directing flags. At night the establishments are shown by a red lamp between two white ones.

When the necessary treatment has been given at the dressing station a diagnosis ticket is attached to the man's clothing. This may have already been done on the field, when it will be modified if required. The diagnosis ticket, or specification tally, is identical with and is the original of the one recently introduced in our army. It is of white linen or heavy paper marked in five lines for "No. or name," "Rank or Reg't," "Wound," "Treatment," "Signature of Surgeon," with a counterfoil of half its length from which it may be torn through perforated lines. Although much better than nothing, this is a rather bald and insufficient method. Some



of the continental armies employ white tags to indicate that a man may be moved, and red ones that he may not. This is objectionable in so far as it requires a double supply to be in readiness, Surgeon W. G. Macpherson, of the British army, in a paper read at the 10th International Congress (Berlin, 1890,) proposed to continue the white and red tags with these additions: I, case to be dressed; II, to be operated on; III, already dressed, i. e. not to be interfered with until other indications; *a*, foreign body removed; *b*, foreign body not yet removed; *c*, presence of foreign body undetermined. Thus, one of the enemy falls into our hands with a red tag II *b*. It means that the body is insusceptible of transportation and has a foreign body in the wound. The Austrians use a system similar to this. Major V. Havard, of our own Medical Department, has very recently suggested that the diagnosis tag be white with a red and a blue border. On the red "To be transported," on the blue "To remain." On the body of the slip are to be entered the date, name, rank, regiment, injury and treatment. If a flesh wound, whether the man may walk or not, both borders are to be torn off. If severely wounded, unable to walk but capable of transportation, the blue border is torn off, leaving the red. If he is capable of being moved without danger to life, the red is to be torn off, leaving the blue. A combination of those systems, with a slight modification of each, might be arranged to afford an international code and enable the successive medical officers into whose hands a case might fall, although ignorant of the language of the inscription, to understand its history without repeated examination of the patient.

A field hospital is non-dieted. That is, the men are supposed to bring with them their rations for the day, and instead of the regular hospital diet the field ration will be cooked, supplemented by such extras as the medical officers may advise and the officer in charge of supplies can procure. The latter are issued on diet sheets. No hospital clothing is issued field hospitals, and clothing absolutely necessary for patients is drawn from the clothing depots. Washing is done by the washermen attached as such, the materials being obtained from the Supply officer. Kits, arms and

accoutrements are entered in detail in the pack-store book, and are transferred with the men from place to place. The management of the hospital is as far as possible according to the rules of a station hospital, and especially no man is allowed to pass toward the rear whose name has not been entered in the Admission and Discharge Book [Register], and every particular concerning him has not been recorded. When men are to be transferred to the rear, individual medical certificates, according to a form, are prepared from the Admission and Discharge Book and a nominal roll in duplicate, showing numbers, names, corps, diseases or wounds, and dates of admission and transfer. The certificates and one roll are sent with the party, and the duplicate roll is sent to the Principal Medical Officer. The Certificate and our Transfer Slip correspond in function. The medical officer in charge of the field hospital replenishes from his reserve panniers the supplies of the medical officers with the battalion and the bearer companies, on their requisition. He renews his own stores by requisition on the medical officer in charge of the advanced depot.

He sends a daily State [Report] of Sick and Wounded to the Principal Medical Officer of the division, and a weekly Return of the Sick alone (less elaborate than the Return from Station Hospitals), to the Principal Medical Officer of the army. As soon as possible after an action he prepares duplicate nominal rolls of all officers and enlisted men wounded therein, specifying briefly and accurately the kind of injury and its severity. One copy is for the Commanding General through the Principal Medical Officer of the army, and the other goes through the Principal Medical Officer of the division for the Director General.

#### OTHER HOSPITALS IN CAMPAIGN.

A General Hospital, organized and administered as already described for other General Hospitals, except that its equipment is held from the Ordnance Store Department, is to be opened at or near the base of operations. The scale for such a hospital is that for 500 beds. Attached to this and to other General Hospitals is a military depot for the men discharged from the hospital.

This Depot is a part of the organization of the hospital, and accompanies it on active service wherever it may be moved. The commanding officer of the depot has no authority over the hospital itself nor over any one connected with it, nor may he interfere with its discipline, order, or arrangement, which are entirely under the control and orders of the Principal Medical Officer. But besides being in command of the convalescents discharged from the hospital, he takes charge of the arms, ammunition, &c, of the patients sent from the front, he supplies them with the necessary clothing, disposes of questions of pay and allowances, issues transportation, conducts all correspondence not medical, inters the dead and disposes of the effects of the deceased, and reports the arrival and departure of patients and the deaths in hospital to their corps as well as to the military authorities. He supplies hospital guards and fatigue parties from the strength of the depot. This is in effect a Convalescent Camp, whose commanding officer is the adjutant and quarter-master of the hospital, but over whom the medical officer has no control, and who, in turn, cannot control him. It makes the administration of the hospital double-headed, with a necessary division of authority, and, it would appear, a risk of confusion and a certainty of delay. The depot commander must depend upon the medical officer for his information; the medical officer must depend upon the depot officer for the accomplishment of much work. This arrangement appears antiquated and undesirable of imitation.

The medical officer in charge makes weekly returns in duplicate, by regiment or corps, of all men present. The system actually in vogue is somewhat complicated, but a weekly report to company commanders, of admissions as well as of death and discharges, might be useful in our own service, in permitting those officers to trace their men through the somewhat prolonged chain of hospitals that are part of an army in a great campaign.

All general hospitals have special accommodations for officers, and when an officers' hospital is opened on active service special scales of diet may be issued.

## HOSPITAL SHIPS.

Should it be inexpedient to form a general hospital on the sea-board, one may be established on a hospital ship; or these may be used to supplement the former. The responsibility for the hospital ships of an army is divided between the Admiralty and the War Office; and this curious dual relation is reported, not for emulation, but as history. The Admiralty provides lodging, victualling, and conveyance of the sick, and supplies cooks, shipping, fittings, bedding, food, medical comforts, disinfectants, washing, and mess utensils of every kind. The War Office supplies medical and other attendance for treatment and nursing, furnishes all personal and hospital clothing, medical and surgical appliances, and hospital utensils. The ship is fitted out under the superintendence of representatives from both services. When necessary, each division of an army corps may have a steam hospital ship with a capacity of 200 to 250 beds. One or more fast steam vessels having a capacity for 60 beds may be used as Relieving Ships, to carry the worst cases to England or elsewhere; and steam dispatch vessels with canvas cots may be used to take less grave cases to intercept packets. Every hospital ship has a small steam transport as store-ship, with 400 cots more than those in use on board. These may be fitted into transports to remain at the base when more hospital accommodation may be needed. Every transport is required to have accommodation in its sick bay for 3 per cent of the force it carries, and hospital transports remaining at the base may be transformed into emergency hospitals when required. The medical officers in charge of hospital ships shall conduct them as far as possible as station hospitals, and on arrival at home for discharge the senior officer in charge of ordnance stores takes charge of the War Department property.

The hospitals between the field and the general hospitals are known as "Hospitals on the line of communication," and they are a medium between the others in size and permanence. The scale of supplies for them is that for 200 beds, and is arranged with the view of this being readily moved. But these hospitals are not supplied with transportation of their own. They are to be established



in such suitable buildings as may be found, and if such are not available, then in hospital marquees. Directions are given for the selection of sites for sanitary considerations and ease of communication. It is prescribed that these and provision stations are to be placed at regular and convenient intervals. Each hospital has separate accommodations for officers. Washing is done by attached washermen. A pharmacy wagon and a surgery wagon are a part of the equipment of these hospitals; the former closely resembles the Autenrieth wagon, supplied our army in the field the latter part of the civil war, and the latter is an army wagon devoted to medical and surgical supplies conveniently packed in baskets. For hospitals of this character these wagons are very suitable.

When patients are to be transported toward the base, the same rolls are prepared as at field hospitals. A medical officer proceeds in charge of each party, with a non-commissioned officer of the Medical Staff Corps who has charge of the kits, arms, &c., and signs for them. If a man and his effects are left at an intermediate hospital, the disposition is noted on the nominal roll. If a man dies en route, his effects are taken on to the base.

No Daily State is required from these hospitals, but a Weekly Return, similar to that from the field hospitals, is made. Medical officers in charge of all hospitals furnish the Principal Medical Officer of the army, when called on, with a descriptive numerical classified return of wounds, injuries, and the result of operations.

The whole scheme of the hospital service in the field is based on the theory of invasion and of active columns proceeding from a marine base, where the general hospital is established and whence the process of transfer to England of the seriously disabled is carried out.

#### QUARTERMASTERS.

The Quartermasters of the Medical Staff are officers with honorary rank, invariably appointed by selection from the staff sergeants of the Medical Staff Corps. They serve under Principal Medical Officers and the commanding officer of the Depot, and are attached to hospitals and to other medical commands, reporting to

these officers and relieving them from the immediate performance of much official drudgery that would fall upon our officers in like places, as well as discharging duties created by and peculiar to the British system. Omitted in its natural order in the earlier part of this report, this *résumé* of their duties in garrison as well as in the field is introduced here.

In general terms the quartermaster attends to, and is responsible to the medical officer for, all matters connected with stores, equipment, and accounts. Under the Principal Medical Officer he is responsible for all duties connected with the clothing and equipment of the Medical Staff Corps of the district or command; he may act as sub-accountant for the payment of the corps; and he has the custody of the instruments and supplies in charge of the Principal Medical Officer. When a sub-accountant, he renders to the pay officers the proper returns, direct, and is responsible that the money necessary for the weekly payments is transmitted to the medical officers in charge of detachments. He prepares for signature by the Principal Medical Officer, and initials as correct, all correspondence on clothing and equipment. When in charge of general medical stores, his duties are those of our Medical Storekeeper.

At General Hospitals he prepares all the information necessary for the Royal Engineers and the officers in charge of barracks at their inspections to assess damages and deficiencies against regiments or corps whose sick have been treated in hospital, or against those connected with the hospital. He prepares assessments for personal charges for loss or damage to equipment or stores, for the Principal Medical Officer, when satisfied of their correctness, to forward. He obtains equipment and stores as required, and is responsible for the receipt, custody and issue of all articles in the provision and equipment stores, and sees that there is no unnecessary accumulation. He is invariably present when supplies are received, and is responsible that the quantities are correct. The Orderly Medical Officer is responsible for their quality. He is charged with various detailed duties in connection with the hospital library and with damage to the books and other public property, and he prepares certain returns to be rendered by the Principal Medical Officer to the Director

General in connection therewith. At a General Hospital he prepares, initials and submits for the signature of the Principal Medical Officer, all returns (except those made by the Registrar) and requests, except for current supplies. He "takes over" for the Principal Medical Officer the hospital buildings, out-offices and enclosures, furniture, equipment and stores, officers' quarters, and barracks. He is responsible to the Principal Medical Officer for all the stores and equipment held in hospital at large, for the custody and care of all hospital equipment of every kind, and for the care and proper disposal of all the Steward's stores and all the medical stores. In other words, all that burden of detailed medical responsibility and accountability that rests upon our medical officer, the quartermaster assumes. He is the hospital medical storekeeper.

At the larger station hospitals he exercises a general supervision over the subordinate staff, to insure the orders of the medical officers are carried out in their absence, as well as in the performance of duty analogous to what he would do in a general hospital. Where nursing sisters are employed he does not interfere with them, but he makes to the medical officer any necessary report. If required, he assists in the instruction and training of the non-commissioned officers and men, and in every detail of duty and of stretcher drill. He is responsible to the medical officer in charge for the safe custody of the records, books, medicines, instruments and appliances, and for the preparation of the returns and other papers belonging to them. He also discharges many of the detailed duties of the Steward and the Pack-Store keeper.

In the field, the quartermasters attached to the various hospitals and with the Principal Medical Officers discharge duties analogous to those previously described. In particular they are responsible under the medical officers for duty in connection with the payment, clothing and equipment of the personnel of the hospitals, and take charge of the arms, accoutrements and ammunition of the wounded turned over by the bearer companies.

#### DEPOTS FOR MEDICAL STORES.

Besides hospitals, the medical establishment in the field embraces Depots of Medical and Surgical Stores [Purveying Depots],

[Medical Supply Depots]. The main one is at the base, and is designed to supply all the hospitals with the force, and the hospital-troop and transport-ships. The medical officer in charge is responsible that the stores are protected from the weather, and are arranged so that supplies can be sent to the front without delay. These are renewed by requisition on the Director General, who causes them to be packed so that the repacking at the depot may be at the minimum.

#### ADVANCED DEPOT.

An advanced depot of such stores is established under a medical officer, assisted by one sergeant-compounder, one corporal as clerk, two privates as storemen; and it is supplied with a tool-chest from the base. He procures by requisition, from the base, sufficient material for the field hospitals and other medical demands at the front. Besides the general supplies, he keeps complete 6 pairs of Nos. 1 and 2 "Reserve" panniers, 12 companions with water-bottles, 24 havresacks and water-bottles, 6 surgical bags for cavalry, and 6 field fracture boxes. All his stores are to be packed in convenient packages, and he must avoid such accumulation as might hamper the forward movement of the army. He files as vouchers, copies of all indents for stores on the base and all requisitions for supplies from the front, and his only book is a Register of Medical Stores and a guard-book [portfolio] with a supply of forms. The book-keeping is thus reduced to a very simple matter, worthy of emulation.

#### ADMINISTRATIVE MEDICAL OFFICERS IN THE FIELD.

At the base of operations a Principal Medical Officer, under the general there in command and the Principal Medical Officer of the army, has control of all the medical establishments, including the Hospital Ships, and sees that the required duties are performed. All medical officers, soldiers of the Medical Staff Corps, and persons seeking to render voluntary aid, report to or are reported to him, both on arrival and departure from the base. He arranges for the reception into hospital of all patients from the front, and for their future disposition when their hospital treatment terminates there. He is responsible that all vessels to carry invalids are properly equipped,



and that the medical duties connected with the General Hospital Depot are properly carried out. He is the accounting officer for the clothing and equipment of the Medical Staff Corps at the base and on the lines of communication, and his quartermaster attends to their pay, clothing and equipment. He has no stated returns to make, but renders such as the Principal Medical Officer of the army requires. He is assisted by a staff.

With a cavalry or infantry division, the Principal Medical Officer is on the staff and remains with the headquarters of the division, advises the division commander on all matters affecting the health of the division, and receives and transmits his orders and those of the Principal Medical Officer of the army. The medical officers and the Medical Staff Corps within the division are subject to his orders and are at his disposition, and under the division commander he is responsible for the movements and distribution of the companies and the hospitals at all times. He is the accounting officer for the clothing and equipment of the Medical Staff Corps in the division field hospital and the bearer companies, and his quartermaster takes charge of such papers. He makes all reports on hospital establishments to the division commander and to the Principal Medical Officer of the army, and sees that medical officers attached to regiments do not encumber their commands at the front with sick. He carefully guards the field hospital from being overcrowded, keeps up a system of removal to the rear, but does not allow men likely to be effective soon to go there. When called upon, he supplies the division general from nominal rolls with the names and regiments of men sent to the rear. He keeps the Principal Medical Officer informed of the number and description of the sick and wounded requiring transportation, with the character and amount of the carriage. When an engagement is expected he arranges with the division general, and points out to the medical officers commanding bearer companies, or in charge of field hospitals, suitable positions for stations and hospitals, and will satisfy himself that their parties are equipped and the arrangements made. In the absence of the division commander he acts on his own responsibility. When his

division is detached he acts as if he were the Principal Medical Officer of an army.

The Principal Medical Officer of the division, or a medical officer detailed for the purpose, will accompany the staff officer appointed to select quarters, hospitals, or stables for troops, and will examine them as regards cleansing, drainage, ventilation, lighting, water supply, cubic contents, and all matters likely to affect the health of the troops. He will advise the chief staff officer on all such subjects, and will send copies of all his reports to the Principal Medical Officer in the field. He will point out defects requiring remedy, and will state the number of troops or of sick that can be accommodated safely in the buildings. He also examines the sanitary condition of towns and villages about to be occupied, and their neighborhood, and will make such recommendations as he may think necessary for the health of the troops. In selecting a site for an encampment, the Principal Medical Officer will accompany the staff officer, and will give his opinion, in writing if deemed necessary, on the salubrity or otherwise of the proposed position, with recommendations respecting the drainage, preparation of the ground, the distance of the tents or huts from each other, cleanliness of the surrounding ground, ventilation, water supply, position and regulation of the latrines and slaughtering places, disposal of refuse, burial of the dead, and disposal of carcasses. In connection with the staff officer concerned, he will examine and report upon the amount and quality of the water supply, point out its best source, and indicate precautions for its cultivation and care. He will superintend the sanitary arrangements of the camp and of occupied towns; will see that the surface and vicinity of the towns and camps are kept clean and free from nuisances, that defects of surface drainage are remedied, the dead interred and the offal properly disposed of, latrines are properly regulated, and that the purity of the water supply is preserved. He will keep himself informed as to the sanitary condition of the hospitals, huts, tents, houses, &c., and will recommend such precautionary measures as he may see fit for the prevention of disease, and will report to the chief staff officer defects and negligence in the discharge of sanitary duties in the camp.

The Principal Medical Officer of the division will make a daily inspection of the camp and will especially inform himself as to the health of the troops. On being informed of the presence of disease, he will examine into its cause, ascertaining whether it proceeds from or is aggravated by defects in drainage, cleansing, nuisances, overcrowding, want of ventilation, bad or defective water supply, dampness, marshy ground, or any other local cause; or from bad or deficient food, intemperance, unwholesome liquors, fruit, defective clothing or shelter, exposure, fatigue or other general cause. He will report to the chief staff officer on such causes and the measures he proposes for their removal, and will send a copy to the Principal Medical Officer of the army. He will also report daily on the progress or decline of the disease, and on the means necessary for the removal of its causes, until it becomes no longer necessary to do so. When on the march, the Principal Medical Officer of the division, or a medical officer specially appointed by him for such duty, will accompany the staff officer who precedes the troops, to collect information on medical topography with reference to sites to be selected or avoided. During epidemic seasons he will indicate the best means to mitigate or prevent the attacks of disease on the march.

These minute directions have been transcribed almost verbatim from the regulations, in order that by their detail it may be seen how much importance is attached to the duty, and what care is taken that the use of general terms shall give no excuse to medical officers to omit, or for others to interfere with any part of these important functions. They also show how these hygienic considerations, which formerly were practically ignored, are now recognized in connection with the efficiency of the active forces.

The Principal Medical Officer of the division sends a Daily Consolidated State [Report] of the Sick and Wounded in the field hospitals under him to the division commander, for his information and for that of the commanding general of the army, and to the Principal Medical Officer of the army. He prepares a weekly Sanitary Report on the state of the division, to be sent to the Principal Medical Officer of the army for the information of the commanding general, and a copy of this is transmitted by the Principal Medical

Officer to the Director General. He furnishes the Principal Medical Officer of the army full information as to the sanitary state of the troops and hospitals, at such intervals as the latter may direct. He also sends the Principal Medical Officer of the army a consolidated descriptive numerical classified return of wounds and injuries, together with the results of operations, and the originals from the field hospitals, for transmission to the Director General.

No provision is made for a Principal Medical Officer of an Army Corps as a fractional part of an army.

The Principal Medical Officer of an army is assisted by a staff, and in the field has his headquarters with the general officer commanding the lines of communication, but he will be available for consultation with the general-in-chief, whom he will advise in writing in reference to rations, clothing, shelter, sanitary arrangements and precautions for preventing disease, and on all other subjects bearing on the health and physical efficiency of the troops. Under the orders of the general commanding the lines of communication he will have the supreme control of and be responsible for all medical arrangements and establishments connected with the force. He will advise and carry out the orders of the general-in-chief in all medical matters connected with the movement of troops toward the front, of sick and wounded toward the base, and the transport of medical supplies. He will send to the Director General, at such intervals as the latter may determine, full reports concerning the hygiene of the army, with such recommendations for improving it as may be considered requisite. He will inspect the whole of the hospital establishment of the army. With the approval of the general commanding he will decide, according to the supplies obtainable, the scale on which the hospital diets shall be issued. He will keep an adequate advanced depot of medical stores within easy reach of the field hospitals. On receiving from the Principal Medical Officer of a division intimation as to the number and class of cases to be evacuated from field hospitals, he will detail, from the staff of the hospitals on the line of communication, medical officers and attendants to accompany them toward the base, and will see that sufficient provision for supplies on the



road is made, and he will at once arrange with the general officer commanding the line for their transport, specifying as far as possible the amount and kind of carriage required. Notwithstanding the direct and enviable authority that the Principal Medical Officer exerts over all branches of the Medical Department, it appears from this that he has no transportation, except the limited amount attached to the field hospitals, that he can call upon. The absence of an adequate ambulance train seems a serious defect.

Besides forwarding such returns as he receives for the purpose from the divisions, the Principal Medical Officer sends a consolidated daily state of sick and wounded to the Commanding General. He keeps a diary of all medical, sanitary, and statistical matters of interest connected with the proceedings of the force, and communicates them from time to time by letter to the Director General. At the termination of the campaign he furnishes the Director General with a general return of the casualties and sickness of the force.

#### VOLUNTARY ASSISTANCE.

The difficult and delicate questions connected with philanthropic assistance outside of the permanent military organization are regulated thus: All the medical officers of the Auxiliary Forces, civil surgeons, nursing sisters, and others rendering voluntary aid, whose services are authorized by the General Commanding on the recommendation of the Principal Medical Officer of the army, will be placed at his disposal for duty in hospitals on the line of communication and at the base, at such places and in such ways as he may deem expedient. They will act under the medical officer in charge of the hospital in which they do duty, who may suspend from duty any guilty of misconduct or disobedience, reporting them to the Principal Medical Officer, who will take such further steps as necessary. Representatives of Aid Societies must place at the disposal of the Principal Medical Officer their staff of surgeons and attendants, and all supplies brought by them, for distribution to hospitals. The Principal Medical Officer will assign duties to all such volunteers, and the representatives of the

societies will have no power to remove or re-distribute their staff without his express sanction. All supplies of any kind, by any aid society or others, for hospital use, he will cause to be distributed by the representatives to such hospitals as he may name; but such supplies shall not be introduced, used, or issued except by permission of the medical officer in charge. No civilian is allowed to visit any hospital except on the pass granted by the medical officer in charge. This regulation will be appreciated and envied by all medical officers who are cognizant of the wasteful and often demoralizing prodigality of aid societies, and of the incompetent intrusion that, intermingled with valuable aid, embarrasses active military service. Any popular war will find the volunteer army that must prosecute it flooded from the rear with patriotic gifts and overrun with enthusiastic helpers. It is much better that the channels into which these streams should flow, and the limitations that they must respect, be defined at first, than that there should be an effort, liable to be ineffectual, to concentrate operations already wide-spread and independent.

#### FIELD INSTRUCTIONS.

The Principal Medical Officer in the field, with the sanction of the Commanding General when a campaign opens, or whenever else it seems necessary, will issue those instructions regarding sanitary measures for protecting the health of the troops that he may consider requisite for the guidance of medical officers.

I had the opportunity of examining such instructions issued in the Suakin Expedition, and I introduce extracts from them partly to show their general scope and partly because of their intrinsic value. I very much regret that I failed to note the name of the officer who prepared and issued these valuable memoranda.

#### *"Enteric Fever.*

"A safe rule is to treat all cases of camp-diarrhoea with elevated temperature as enteric fever. In warm climates and field service this fever does not invariably conform to the temperature ranges of medical authors."

*"Water.*

"Preliminary hygienic examination of water can be made in half an hour, including color, taste, odor and clearness. Organic matter may be estimated by boiling with gold terchloride: putrescent matter is tested by potassium permanganate; chlorine by nitrate of silver; calcium by ammonium oxalate. A concentrated solution of nitrate of silver applied to water and exposed to bright sunlight, by comparing the darkening in rapidity and depth with distilled water similarly treated, is a good test. A very portable leather case holding the necessary chemicals is easily arranged. Alum is a very efficient means of removing suspended impurities, at the rate of 6 grs. to the gallon, standing 10—12 hours. Brackish water is best for cooking, or as a vehicle for food requiring some salt. An efficient filter may be made of a tin can, with clean sand and linen or flannel. Charcoal is a good purifier of organic matter."

*"Density of Population.*

"At the rate of 12 men to a tent, the density of population in camp will be:

For one tent every	50 sq. yds.,	96.8 men,	or 1161.6 per acre.
"	" 100	" 48.4	" 580.8
"	" 400	" 12.1	" 145.2
"	" 1000	" 4.84	" 58.

The composition of the field ration for that expedition is then given:

"Bread 1 1-4 lb. or Biscuit 1 lb.; Meat, fresh 1 1-4 lb. or preserved 1 lb.; Tea 1-3 oz.; Coffee 3-4 oz.; Sugar 2 1-2 oz.; Salt 1-2 oz.; Pepper 1-36 oz.; Potatoes, or fresh vegetables 12 oz., or compressed vegetables 1 oz.; Jam or marmalade, occasionally; Erbswurst, 2 oz. occasionally; Lime juice, 1-2 oz.; Sugar 1-4 oz.; Rum 1-16 oz. when ordered."

The details of this ration differ from those of the standard field ration, especially in that the fresh meat and vegetables are increased, erbswurst is introduced, and the rum when allowed is greatly reduced.

"Lime juice should be issued daily with preserved provisions, and invariably when there are no fresh vegetables."

The following list of Medical Comforts, resembling our Hospital Stores in their purpose, is then given:

"Brandy, Port, Champagne, Claret, Tarragona, Ale bottled, Porter bottled, Milk condensed, Extract of Meat, Essence of Beef, Hospital Biscuit, Arrowroot, Sago, Cocoa and Milk, Cocoa peptonized, Scotch Barley, Oatmeal, Mustard, Soups, Fowl, Preserved Potatoes, Pickles, Jam and Marmalade, Moir & Sons' rations (meat, gravy, vegetables and pickles, mixed)."

This was succeeded by a list of the clothing issued for the campaign, viz.

"1 serge frock, 1 serge or tartan trousers, 2 frocks Khakee drill, 2 trousers Khakee drill, 1 pr. ankle boots, 1 helmet, 1 veil, 1 back pad (spine protector), 1 pr. goggles, 2 flannel belts, 1 clasp-knife and lanyard, 1 tin of grease, 1 housewife, 1 blue worsted cap, 4 pieces yellow soap: also 1 pr. ankle boots, 1 great-coat without cape, 1 forage cap, 1 kit necessities field service."

A list of that kind in the possession of every medical officer keeps him informed not only of what the Medical Staff Corps soldiers should have, but also exactly how every man of the force is protected from the climate.

#### *"Dead Animals.*

"The lungs of slaughtered animals should not be thrown overboard from floating slaughter-houses. On land, tie the hind legs together and drag to the leeward of a sand-hill and bury. If there is not time, bury the viscera and make a fire of rubbish within the trunk. Or make several stabs for the free escape or exit of gases."

#### *"General Suggestions.*

"If the men are employed early in the morning or late at night they should have a ration of hot cocoa and milk or tea or coffee.

"Prompt aid to the wounded depends on good field organization and administration by the Medical Department. While in wars with artillery and arms of precision the wounded must be carried to the hospital, in such a war as this a section of the Field Hospital and a part of the Bearer Company may be brought well to the front, when the wounded may be carried thither without the risk of a hurried application of first aid. The application of first aid to gunshot is superfluous and may be mischievous, for it has to be cut off at the first dressing station. Hence in bullet flesh



wounds do not probe, finger, wash or disturb in any way, but keep the wound at rest and if necessary use morphia.

"In Egypt in 1882 this was done with advantage: Garments ripped or cut; wound and skin well cleansed with carbolic acid 1:20; *lightly sprinkled* with iodoform powder: covered with "protective" (oiled silk) dipped in carbolic solution; covered with a couple of layers of boracic lint, and fixed with gauze bandage.

"When there is extensive injury of the bone or other parts, especially of a joint, do as little as possible beyond covering with antiseptics, enforcing immobility, and removing to hospital for deliberate dressing.

#### *"Antiseptic Solutions.*

- "1. Corrosive sublimate.....dr. 4
- Glycerine.....oz. 6
- Alcohol.....oz. 4

"POISON—One ounce to 2 1-2 pints of water.

- "2. Carbolic acid for syringing.....1:20
- Carbolic acid for dressing.....1:40

- "3. Chloride of zinc.....40 grs. to 1 oz.

"After amputation, mix one of zinc with three of carbolic solution 1:40 and apply to the flaps. Styptic and antiseptic.

"4. For a suppurating gunshot track, use a drainage tube, syringe with iodoform 10—15 grs., carbolic solution 1:20 1 oz. Stir and inject with a syringe.

"Used in Dresden civil hospital in one year for 1,527 surgical cases and 300 important amputations without infective wound disease occurring, as follows:

"Corros. sublim. 1:1000 for dressing wounds. Good results 1:10,000. Antiseptic gauze made by impregnating gauze in a solution of sublimate 10, alcohol 4490, glycerine 500. Suture silk boiled one hour in 1-2 per cent. solution of sublimate. Catgut, by placing catgut 24 hours in 1-2 per cent. solution of sublimate and keeping in alcohol. Operation sponges are kept in a solution of 1-2 per cent. sublimate in water.

"Antiseptic solution for dressing wounds:—Camphor, 1 scruple; Glycerine, Alcohol, each 1 oz.; Water to 16 oz.; Cor. Sub. 3 1-2 grs. (1:2000). Moisten lint, cotton, or dressing with this, and prevent evaporation by impermeable material."

#### *"Medical Assistance in the Field.*

"1 medical officer to a regiment of cavalry or infantry (servant from the ranks of that corps and baggage carried by regiment). 1

corporal and 1 private from the regiment. 1 pr. field panniers, medical; 1 field companion with water-bottle; 1 surgical havresack with water-bottle; 1 circular tent for surgery.

"For battery, troop or detached company: 1 medical officer; 1 private from the corps; 1 field companion with water-bottle; 1 surgical havresack with water-bottle.

"Each medical officer is to have a copy of a hospital diary or ward book (Bk. 39) but not required to furnish any return of sick; but he must see all the sick with the company sick reports before they go to the field hospital."

The hospital is supplied with blankets, bolster cases, and waterproof sheet, but not with bedsteads or paillasses.

#### *Returns Required.*

"Daily, each field and other hospital to P. M. O. (A. 29).

"Daily, consolidated of above from P. M. O. to Commanding General. (A. 28).

"Weekly, from every hospital to P. M. O. of army, and duplicate to Director General.

"Special, as called for by P. M. O. (Forms A6, A7).

"Reports, as called for by P. M. O's.

"Weekly sanitary, by Sanitary Officer to P. M. O.

"Periodical, by P. M. O. to Director General in every matter connected with health, hospitals, supplies, personnel, &c.

"Nominal rolls of sick and wounded sent from front to base (I. 1225) accompanied by medical certificates.

"A copy of every nominal roll is kept by the P. M. O. Force, for reference for tracing. The other goes with the men to the base for filing in the General Hospital. The disposal of every man en route or at the terminus is noted in the remarks."

This is not a complete copy of the instructions, but it is sufficient to show their tenor and to illustrate how useful such a compilation of important points may be to inexperienced officers. Similar attention to officers taking the field is not unknown in our service, but it is not specifically provided in the regulations, and I know of no case where it has succinctly covered so many points.

#### *ENGLISH AUTUMN MANEUVRES.*

*My* During ~~the~~ stay at Aldershot the Autumn Maneuvers of the First Army Corps were carried on for a week twenty or more miles away. I did not see these, because it appeared that the special con-

ditions that I should be expected to observe would not occur. The Medical Department was represented there only in the most elementary form. To the 14,000 troops, concentrated in two opposing camps, four medical officers were assigned, whose time was engrossed by the daily "inspection" [sick call]. They examined, as well as possible, those applying, and sent back by rail without delay to the permanent hospitals at Aldershot, all who did not seem able to keep up with their comrades in the not very arduous service required. Except in that meagre form there was no Medical Department with the contending divisions, to the best of my information. Principal Medical Officers, hospital trains, field hospitals, bearer companies, even battalion medical officers and regimental bearers, all were absent. Naturally, I did not inquire too curiously into the cause of the failure to utilize such an opportunity for practical work, but I believe that the Medical Department was not responsible. In the German service there are, at least annually, field operations on a large scale where company bearers, dressing stations, field hospitals, and all the machinery of active service are brought into play.

Drill and practice in methods are as desirable for ambulances as for caissons, and the careful removal of suppositious wounded should have an equal drill value with the formation and movement of imaginary lines of attack and defence. As another has said, the objection of expense sometimes urged against the field operations of the Medical Department is never efficient against artillery and small arms practice; and it may be added that the equipment of the one would thereby be tested, rarely destroyed, while the ammunition of the other is expended, if not wasted. Modern wars are too sudden in their onset to allow the Medical Department, which in the nature of the case has few current opportunities, to await for its mechanical training the pressure of immediate service.

#### THE ARMY MEDICAL SCHOOL.

The Army Medical School is established at Netley, on Southampton Water, in connection with the Royal Victoria Hospital; but it has a distinct and independent existence under the Secretary of State for War, and is governed by its own Senate. The Senate con-

sists of the Director General of the Army Medical Department, the Physician to the Council of India, the Professors of the School, and the Principal Medical Officer at Netley. The Senate regulates and decides all matters of instruction and discipline, prepares estimates for expenditures, and has a general care over the school. It meets once in three months, or more frequently if necessary.

The Army Medical School, really the fruition of Robert Jackson's far-reaching scheme\*, was the immediate outcome of the Royal Commission of 1857 that inquired into the sanitary condition of the army; an inquiry consequent upon the developments of the Crimean War. The Commission recommended such a school, where "the specialties of military medicine and surgery, hygiene and sanitary medicine might be taught to the young medical officers of the army," and the institution was established in 1860 at Fort Pitt, Chatham. It was transferred to Netley in 1863, when the Royal Victoria Hospital was opened there. The province of the school is to supply supplementary and special instruction suited to the requirements of the military service, and it very admirably discharges that function. There are four professors, who may be appointed from civil life or from the active or retired medical officers of the British or the Indian army. The appointments made since 1882 are for seven years or less, and are renewable for one term. The chairs are those of Hygiene, Clinical and Military Medicine, Clinical and Military Surgery, and Pathology. There is one Assistant Professor, detailed from the medical officers of the army, for each chair.

The Royal Victoria Hospital is a General Hospital especially designed to receive soldiers invalided from abroad, and has a nominal capacity of 872 beds. It is only exceptionally filled, but under pressure it is capable of receiving more than that number of patients. It has two divisions, a medical and a surgical, and in it the surgeons on probation obtain a practical acquaintance with the administration of military hospitals. To that end they are distributed in immediate charge of the different wards under senior medical officers. They are required to prepare personally all the ward papers and books, and specimens of the more important ones necessary in the hospital at

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\* "The Medical Department of Armies," London, 1805; pp. 76 *et seq.*



large, to care for their patients, and to learn thoroughly the principles of nursing and of sanitation. The manner in which all this is done is scrutinized at the time, and is made the subject of grading at the examination. They are individually and collectively carefully taught in these technical matters, and also in all that pertains to the invaliding or other disposition of soldiers, both by precept and by concrete examples. They also receive formal instruction in the principles and administration of military law, in anticipation of duties that as detachment commanders they might otherwise reach without preparation. They go on duty in rotation as Orderly Medical Officer [Medical Officer of the Day] and they receive practical instruction in the school of the soldier and in stretcher drill, acting as bearers, an hour each day. All these technical matters are carefully and persistently taught, and they consequently go forth in a body uniformly trained and in close official relation with the method of preceding and succeeding classes. The great advantage that this is to the public service, whether the young officers go out to independent stations or as subordinates with seniors, is too palpable to require demonstration or remark.

The instruction in surgery and in medicine is in part clinical and in part didactic. The professors have control of the wards sufficiently to use them for all clinical purposes, and the cases may illustrate the lectures or be the subject of special exposition. The lectures, given once each week in each of these branches, have exclusive reference to military surgery and to the diseases, especially the tropical diseases, to which British soldiers are most liable, as modified by the conditions of military service in different countries. The influence upon physical health, the advantage of frequent inspections in unhealthy seasons, and the importance of "invaliding," or change of climate, in maintaining the efficiency of troops in hot or sickly regions, are dwelt upon. There is a special course of lectures on lunacy, by the officer in charge of the attached Lunatic Hospital. This embraces the importance and the methods of eliminating imbeciles and those likely to become insane from applicants for enlistment, the study of the special arrangements of lunatic hospitals, examination and diagnosis with particular reference to feigning, the

medical and other treatment of such patients, the selection and instruction of attendants, the military regulations affecting insane soldiers, and the legal relations of insanity. All these features are illustrated clinically as far as possible.

The instruction in military surgery involves a description of weapons and missiles used in war, a discussion of the laws of projectiles, of their passage through resisting media, and their action on the human body. The primary and consecutive treatment, antiseptic and operative, of gunshot wounds is developed. Medical field organization, including equipment, transportation and hospitals, is explained in detail. The lectures are illustrated by specimens and models from the School Museum.

The examination of recruits is taught by lectures and demonstration; and, in order to assist in an understanding of this important duty, during one week of the course all the applicants for enlistment in that military district are sent by the commanding general to Netley. Those men are examined in the presence of the class, and both the principles and practice of recruiting are carefully illustrated.

Optometry is taught by lecture and demonstration, to show how the vision should be tested for military fitness, and its principles are explained.

Pathology is taught at Netley in the lecture room, the mortuary, and the laboratory. The lecture course covers so wide a range that only selections from the whole are possible at any one session. The general subjects are the influence of micro-organisms, immunity, urinary analysis, age, development, and the geographical distribution of disease. The special subjects are the climatic conditions of the principal foreign stations, and the pathology and morbid anatomy of their prevailing diseases. These are illustrated by specimens from the museum. One lecture is given each week, and laboratory work is carried on twice a week. Attendance at autopsies and work in the pathological laboratory are required of all the class. Three surgeons on probation perform the post mortem examinations in turn under the Professor, and the officer in charge of the case reads the history before the examination and takes notes of the latter to

insert in the case-book and in the hospital necrological register. One of the post mortem examinations is made a subject of final examination. A microscope and other appliances are furnished each surgeon on probation for his use during the term, and very careful and graduated instruction therein is given him. The theory and practice of the microscope, to include ordinary clinical work, are explained; and this is followed by practical work by the officer under the supervision of the Professor or his Assistant. Methods of preparing pathological specimens and of doing ordinary histological work are also taught. The student-officer also learns the principles of bacteriological research, to include staining and mounting, sterilization, cultivation, attenuation, and the characteristics of the more important pathogenic bacteria. Besides the work of instruction, the laboratory staff are constantly carrying on original investigation in connection with the service. At the time of my visit a careful study was being made of the pathology of the obstinate and obscure febrile disease commonly known as Malta or Mediterranean fever. From the clinical history there appeared a close resemblance to, if not an identity with, the irregular and serious disease found in our Southern States, that we regard as a malarial remittent, but which has some resemblance to enteric fever, and is especially insusceptible to the influence of quinine.

Military Hygiene is taught by means of two lectures and three hours' laboratory work a week, so as to explain the principles on which preventive medicine is based in both the scientific and the practical aspect, with special reference to the health of the troops in barracks and in the field. The latest edition of Parkes' Hygiene is the text book, and the course treats especially of soil, water, air, sewerage, food, habitations, exercise, clothing and equipment, climate and meteorology, vital statistics, military service, foreign stations, disinfection, the disposal of the dead, and the direct prevention of disease. The laboratory instruction, which is chemical and microscopical, necessarily expands and develops that of the lecture room in explaining the processes. There the instructor first describes in detail the process employed, and then makes a demonstration of the method. Every student is supplied with a desk and apparatus

and reagents, and is required to repeat each experiment frequently enough to become familiar with and accurate in the work. The range of practical instruction includes the examination of water, air, and food. Its character is best shown by citing from recent examination papers these:

*27th Jan. 1890; from 11 A. M. to 2 P. M.*

1. What are the essential constituents for a diet for ordinary work, and in what proportion must they be supplied? State briefly the functions fulfilled by each constituent and how far one constituent may replace another.

2. Mention the different methods for the disposal of sewage, and discuss any one of them in detail.

3. On what principles must disinfection be based? State what you know of the action of any *three* disinfectants you select, and what are the limits of their usefulness.

4. What is the usual length of marches? Define a *forced* march. Given a man weighing 10 3-4 stone; his clothing, rifle and haversack, 47 pounds; how much work in *foot-tons* has he done in marching 12 miles at the usual rate—the gradient of the road being 1 in 150? Is this excessive?

*23d July, 1890; from 11 A. M. to 2 P. M.*

1. State the sources of impurity generally found in potable water. What are the circumstances connected with a water-supply that favor lead poisoning? What quantity is poisonous, and how would you proceed to detect its presence?

2. How do you calculate the amount of air required to ventilate a room in which 12 men, working hard, are employed? What would be a suitable size for such a room in order to secure proper ventilation?

3. State the measures you would adopt to prevent the spread of cholera, enteric fever, and epidemic dysentery.

4. Mention the chief methods generally adopted for the disposal of sewage, and describe any of these methods in detail. State what, in your opinion, would be the most suitable for a standing military camp in a tropical climate.



*28th July, 1890; from 11 A. M. to 2 P. M. Practical Examination.*

- I. Examine the sample of water before you, as follows:
  - A. Physical character.
  - B. Chemical analysis
    1. Qualitative (except magnesia).
    2. Quantitative, viz.:
      - (A) Chlorine.....in parts per 100,000 and in grains.
      - (B) Nitric acid.....in parts per 100,000.

The water, caustic soda solution and aluminium foil have been put into the retort and left sufficiently long for the experiment.

The free ammonia is 0.0097 centigrammes per litre.

The nitrous acid is 0.0687                      "                      "

II. Determine the fat (by Vogel's process) and the lactine in the sample of milk.

N. B. The whey is already prepared and diluted ten times.

The solids are 11 per cent. and the ash 0.5.

Give your opinion upon the milk.

III. Examine microscopically and describe the contents of one of the packets.

N. B. Note the number of the packet.

*26th Jan. 1891; from 11 A. M. to 2 P. M.*

1. Under what heads may nutritive substances be classified? What is the average chemical composition of each class? State the amount of each required by a soldier during (a) ordinary work, and (b) hard work.

2. Upon what principle does natural ventilation depend? Explain Montgolfier's formula, and give an example. How far can it be relied on?

3. Enumerate and briefly describe the different diseases of animals which render their flesh unfit for human food? How far can they be severally identified in meat on ordinary inspection?

4. What is the "dew point?" How can you calculate it, and having ascertained it what further information can you calculate from it? Describe any form of the hygrometer?

As will be observed, the examination is both written by papers, and in the laboratory, and the same is the case in pathology.

The time given to hygiene, and the care taken in its instruction, are fully warranted by its importance, and in my judgment to teach the subject in this way would be a sufficient reason for the support of such a service school, which is really a special Post-Graduate

College. The examination papers show what may be reasonably expected of men who have had no previous special training in this field, and thus become an index of the care and thoroughness with which the instruction is carried on.

The laboratories of both pathology and hygiene are open for voluntary work at all reasonable hours, in addition to the time required to be spent there, and are freely used.

At the close of the session the reckoning is made up by the written examinations held by each professor in the subjects that he has taught, by the practical examinations in hygiene and pathology, by test cases in medicine and surgery, and by the way official records have been kept. An unfavorable estimate of professional aptitude, independently of professional attainment, may be made the basis of a special report condemning the candidate.

The possible maximum of marks obtainable at Netley is 3500, thus:

Written Examination, Medicine.....	500	
Case Books,                   “ .....	300	
Test Case,                   “ .....	100	
	<hr/>	900
Written Examination, Surgery.....	500	
Case Books,                   “ .....	300	
Test Case,                   “ .....	100	
	<hr/>	900
Written Examination, Hygiene.....	600	
Water Analysis,           “ .....	200	
Meteorology,               “ .....	100	
	<hr/>	900
Written Examination, Pathology.....	500	
Microscopic Drawing,   “ .....	50	
Practical Microscopy   “ .....	150	
Bacteriology             “ .....	100	
	<hr/>	800
Aggregate .....		3500

Each surgeon on probation must attain at least one-third of the maximum in each in order to pass. The marks gained at Netley are then added to those obtained in London in each case, and the relative standing of the candidates is thus finally settled.

The successful candidates are then sent to Aldershot for further

military instruction. The Indian candidates do not go to Aldershot.

At Netley two professional libraries are practically at the disposal of the professors and students. One belongs to the School as such, and is supported by an annual Government grant; the other is maintained by voluntary contributions by the medical staff. These are contained in communicating rooms, and may be regarded as in some measure complementary to each other. They have about 6000 or 7000 volumes in the aggregate, and include valuable series of professional periodicals. The collection is a good general reference library, but is without sufficient shelf-room.

Another part of the teaching machinery of the school is its museum, which consists of four practically distinct sections. The first is a fair mineralogical and natural history cabinet, but is not especially adapted to teach comparative anatomy. There is a supplementary collection in the hospital, largely the gifts of medical officers abroad. The second is a pathological collection of about 4000 specimens, chiefly wet and illustrating disease, although gunshot fractures are fairly represented. It is valuable, and an excellent descriptive catalogue of it, by Sir William Aitken, was passing through the press at the time of my visit. There is also a collection of between 700 and 800 human crania, chiefly normal, from all parts of the world. The third is, roughly speaking, an interesting series of instruments of warfare, of surgical field equipment, and of specimens and models of transport and of hospitals. This includes a classified collection of weapons, of which some are interesting curiosities, such as the flint arrow- and spear-heads of pre-historic man, from the gravel beds of St. Acheuil, Amiens; but in general they represent historically the wars of Great Britain in various quarters, chiefly uncivilized, of the world. There are also numerous projectiles extracted from patients, that show the effect of impact; an exhibition of large and small shot, entire and in section; and a small series illustrating the effect of bullets upon glass, clothing, and other materials. Models and specimens of means of transportation for the sick and wounded, samples of surgical field equipments, and a tolerably large set of first-aid dressings that il-

illustrate chronological changes in this respect, are parts of the whole. The earliest example of first field dressing in the British army was during the Crimean war, when each man received a small piece of lint with a roller bandage wrapped around it. The section of hygiene, or the fourth, contains specimens of soil taken from various military stations, samples of vegetable food grown at home and in the colonies and foreign possessions, medicines used in the army, with each of the foregoing groups conveniently arranged; apparatus for showing the passage of air through masonry, sections of ventilating apparatus, examples of drain and sewer pipes, models of earth-closets, and illustrations of accoutrements and of military clothing, especially of hats and shoes. There are also models of various hospitals, afloat and ashore.

But these useful and interesting collections are deprived of much of their value by the totally inadequate apartments to which they are condemned. Officials who know where to find them can bring out specimens to illustrate lectures, but it is quite impossible to study the most of them, or even to see them fairly. *in situ*. The museum is more than an exhibition or show of curiosities; it is a valuable part of the teaching appliances of the school, and it deserves rooms and cases properly lighted and arranged for its display.

There is a very convenient general lecture room for the school, and upon its walls is a large relief map of India, exposing at a glance the topography of that empire.

Among the memorials of the past that are found in the Museum, is a striking indication of the poverty of equipment that marked the Crimean war, and from which, in a time relatively short, so great an advance has been made. It is the model of an operating tent, where the table is the ground that has been left in the centre by excavating the earth around it. The earthen floor of the tent is thus below the level of the ground outside, and the table is the rectangle of soil left in place for the purpose.

In examining the various examples of transport for the wounded, I saw nothing to be advised for introduction among our material, nor for our conditions anything that for comfort and economy of force approach the travois and the Baily litter.



To return to the Class. Those finally accepted are sent to Aldershot as officers of the Medical Staff. And it is rare that one who reaches Netley does not graduate from it, the exceptions when they occur being on account of some infirmity of character that shows itself.

At Aldershot, as already explained, are the depot and the training school of the Medical Staff Corps. There these officers become occupied with the practical study of military duty. At first they are put into the ranks along with the recruits, until they have thoroughly mastered squad drill; they then are drilled together by sergeants in the infantry company drill, and in all the details of bearer drill. This not merely in charge of detachments, but in doing the work themselves, so that they may be perfectly competent to act as instructors. The instruction involves work with stretchers, with ambulances, and with mule-litters. The animals are harnessed and unharnessed by the officers, and the instruction is perfectly practical. For the first month this occupies three hours a day and afterward two hours daily. Included in this time are hours when very wet weather forbids out-door work, that are utilized for instruction by lectures upon the duties of medical officers in the field. These lectures explain the equipment and management of base and intermediate hospitals and of bearer companies, the field work of the Medical Department, the arrangement of the collecting and dressing stations and of field hospitals, and the duties of a medical officer on the march and in action. The actual pitching of tents and the establishment of a field hospital is a part of this instruction. A special practical course is delivered in the latter part of the term, in hours obtained by shortening parades that officers attend, in the use of Esmarch's triangles and other extemporaneous field dressings. Another hour a day is occupied with lectures on the regulations, and an explanation of the forms required in the management of a company or detachment of the Medical Staff Corps, including the supply of clothing, rations and pay; upon the principles of discipline and a study of the military code, as applied to the minor offences that are taken cognizance of by the company and regimental or depot commanders; and practical instruction is given in the var-

ious forms of inspection, on parade and in barracks. These officers take their tours as orderly officers [officers of the day] in charge of the camp and the guard, and they make all the military reports thus required.

The following form of report required from the Orderly Officer is supplied him to be copied, not to be filled out, and it is accompanied by instructions:

From.....  
To  
The Officer Commanding De-  
pot M. S. Corps.  
Aldershot, ....., 1891.

Sir:—I have the honor to report that from reveille yesterday to reveille this day, I performed the duties of orderly officer.

I inspected the rations and found them good [or otherwise].

I inspected the cook house at the dinner hour.

I visited the barrack rooms at the meal hours. There were no complaints [or otherwise].

I visited the Canteen and Recreation Room during the day.

I turned out the guard once by day and once by night. The guard-room was clean and regular, the guard correct, and the sentries alert and acquainted with their orders [or otherwise].

I inspected and marched off the piquet at retreat.

I collected the reports and inspected the staff parade at tattoo.

The Barrack Orderly Sergeant reported to me that all lights were extinguished at "lights out."

I have the honor to be,

Sir,

Your obedient servant,

..... Surgeon.....

*Information for Orderly Officer.*

Rations, - - -	7:30 A. M.	Tea, - - -	3:40 P. M.
Breakfast, - - -	7:40 "	Retreat, - - -	6:55 "
Guard by day, -	12:30 P. M.	" after 1st Sept.	6:25 "
Cook House, -	12:35 "	Tattoo, - - -	9:55 "
Dinner, - - -	12:40 "	Lights out, -	10:15 "
Recreation Room,	12:45 "	Guard by night, -	10:45 "
Canteen, - - -	12:50 "		

The Orderly Officer will on Friday take Fire Screen Practice at the Guard Room 12:25 P. M., and on Saturday visit married quarters at 4 P. M. The Orderly Officer will remain in uniform and not

leave Barracks during his tour of duty. He will wear his pouch belt, jacket hooked up, and red striped trowsers at mess.

He will hand his Orderly Officer's report to the Adjutant at Orderly Room.

By order: (signed) GEO. E. TWISS,  
Surgeon Captain,  
Adjutant Depot M. S. Corps.

To return to the daily duties of the newly-appointed medical officers: Another hour is devoted daily to equitation. The class is broken up into squads of five or six, which are distributed among the various excellent riding schools of the Aldershot camp, under the personal instruction of the military riding-masters. While it is, of course, impossible in so short a time to make an accomplished horseman of the novice, I cannot speak too highly of the intelligent and patient instruction given to the party whose progress I followed in the riding school of the Royal Artillery, by the riding-master, Captain Pawson, and of the results he obtained. Young medical officers, who had no previous experience in the saddle, during this brief course acquired a seat that enabled them to take an average hedge or ditch without difficulty, and to become sufficiently at home on a horse for all ordinary purposes. Their greater usefulness to the army, to say nothing of the personal advantage to them of such training, is very apparent.

At the conclusion of the Aldershot course a practical and written examination is held, and a certificate of proficiency in riding is required. Those officers who fail in any particular are required to return at their own expense, and to take part in each succeeding course until duly qualified. But failure does not disturb their military standing.

In some respects the courses at Netley and at Aldershot overlap, and exertion is thus wasted. But taken as a whole they both are admirable and are strongly commended for our imitation. Our clinical resources are not such as to enable us to devote a military hospital to the kind of teaching that is given at Netley, but there is not occasion for that. In every other respect it would be a profound advantage for our junior officers to be taught,

systematically and thoroughly, the special requirements that their commissions impose, and not leave them as at present to acquire this information in a hap-hazard irregular way as their natural aptitude, or the want of it, may lead. By devoting the first four months of a young medical officer's life to this instruction, he can be started correctly, or he can determine then, what some discover later, that his vocation is for another career. Practical horsemanship is not merely an accomplishment, but a necessity that should be insisted upon.\*

#### PHYSICAL TRAINING IN THE COMPANY AND IN THE GYMNASIUM.

The great importance of physical development is fully appreciated in the British army. The term "physical training" is limited in the technical sense to the exercise in the company that we still call "setting up," and its motive is said to be to expand the soldier's chest and to develop his muscles. This is divided into nine exercises, and begins with swinging the arms in circles. The next is to bend and stretch the body, then to bend and stretch the arms, then to lunge and engage, next bending and stretching the knees. The sixth exercise is a combination of the second and fourth. The seventh is one of four practices for the development of the shoulder by striking out. The eighth is a union of the fourth and seventh, and the ninth is a combination of the whole. These may be practiced singly or in squads, or by company: and they are adapted to music, whose use is encouraged. For a part of them it is recommended that airs with choruses be chosen and the men are allowed to sing the chorus, and they are encouraged to sing through the whole of the eighth exercise. It is officially set forth that the exercises are not to be carried to the point of fatigue, and that they should be varied and be made very short, to avoid fatigue and lack of interest. This is to be practiced constantly, at all seasons of the year and under all circumstances, up to the age of 35 years.

I give no more minute description, because the whole matter is detailed in the Infantry Drill of 1889, an easily accessible book.

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\*Since this was written a school for newly-appointed medical officers, which includes equitation in its course, has been organized at Washington.



In my judgment these exercises are better adapted to the purpose of symmetrical development, are simpler and are more attractive to the soldier than our later drill; and since they are good, I see no reason that their foreign origin should bar their adoption. The regulation "attention," which is the point of departure and to maintain which is one of the objects in view, is practically identical in both armies, except that with the English the feet make an angle of  $45^{\circ}$  instead of  $60^{\circ}$  as with us. Notwithstanding inferior material, there is no question that the British soldier looks better on duty, and as a soldier is more active than our own. To the systematic gymnastic instruction now in force, which is an amplification and an extension of the physical training proper, they are much indebted for this superiority.

The Gymnastic Instruction is required for all young officers of the line (in our sense of the word) and for the men. There are two principal gymnasia in Great Britain; at Aldershot, and at the Curragh near Dublin. The parent one is at Aldershot. These are employed not only for local use, but for training non-commissioned officers as instructors in gymnastics. A gymnasium is supposed to be in operation at every station. The gymnastic training of the cavalry recruit is carried on simultaneously with his foot drills, and he begins no riding until this course, which lasts two months and must not be interrupted, is finished. It occupies one hour a day. The infantry recruit begins directly after completing his physical training with the company, which usually is one month after joining. The course is an uninterrupted one of six weeks, an hour and a half daily. Recruit officers are to undergo the same course and at the same time, unless found efficient and properly excused. Weak and awkward men are kept under this training for three months, and if below the standard of efficiency at that time they are then to be reported to the Adjutant General.

Besides training the recruits, gymnasia are maintained to harden and strengthen the trained soldier, so that at least he may cover 1,000 yards rapidly and then be in condition for efficient bayonet work. To do this with as little interference as possible with the ordinary military duties, men, according to the size of the gymnasium but not

exceeding one-sixth of the garrison, are to be selected and strictly examined medically. These are then put into squads for attendance one hour on alternate days, not exceeding three months. Guards are not to be interfered with. Men under thirty must attend, but with men over thirty the course is optional, subject to the medical officer's approval. Voluntary classes for advanced work may be formed, but no man may join them until after one month's instruction.

Medical officers serving with regiments that have undergone gymnastic training "will specially report on the effects of such training on the muscular development and health of the men on their leaving the station, and as to the general influence of gymnastics in producing a vigorous constitution." They are to visit frequently the gymnasium and witness the measurements of the recruits on entering and completing the course. The Principal Medical Officer is to refer to the subject in his annual sanitary reports, giving the substance of the information supplied by the medical officers, and his own remarks on the utility of the gymnasium. The gymnasium building at Aldershot is not perfectly adapted, on account of size and some minor matters, for its purpose, but the work done in it is admirable. The apparatus is of the simplest description and the floor may be cleared without delay. Parallel bars, light Indian clubs, light dumbbells, a vaulting horse, inclined ladders and the like are all. Using these, but more particularly using them with care, very capital results are obtained. The young men develop in chest-girth and muscle, the weak gain strength, the awkward agility, and the timid confidence. One side of the room is arranged with very trifling foothold for perpendicular escalading, up which men scale successfully; and at one end of the room is a shelf about eight feet from the floor, which men are taught to reach without other help than they can give one another. The ease with which every exercise is performed is delightful to witness. The impression received in watching these exercises was that men with no special physical gifts were brought up rapidly and without distress into admirable condition, and that their military efficiency was greatly increased thereby. It was evident that the men themselves appreciated and enjoyed the work.

The system used is a modification of the Ling method, developed

by Sergeant-Major Noakes, Chief Instructor of Gymnastics in the Army, known as "Free Gymnastics with Light Dumb Bell Drill." It is practiced on the floor of all these gymnasia, and the company Physical Training closely follows it. The testimony of good observers is that this method improves the carriage and condition better than the older way.

Besides the gymnasium training of the recruits and the older men, there are semi-annual classes at Aldershot and the Curragh of non-commissioned officers to be fitted as Instructors of Gymnastics. These men, sent from various regiments on their own application, are given a more thorough course and develop into skilled gymnasts; but their work, like that of all the rest, is done gradually and without strain. I saw at Aldershot some beautiful examples in the open air of running in fours over obstacles, such as hedges, ditches, along the string pieces of bridges whose floors had been torn up, and scaling high wooden and brick walls. These central schools, sending out classes of Instructors uniformly trained, enable every gymnasium to be conducted in substantially the same manner. And such work as I observed at Dublin seemed animated by the same interest and the same energy.

Before going abroad I saw, in 1891, at the Recruiting Depot, Davids Island, elementary gymnastics taught under unfavorable conditions, in a method so similar to that observed in England that I am confident that the instructor was trained at Aldershot. So simple and efficient a method deserves introduction wherever there is a garrison and a shelter can be found or made.

The whole gymnasium system is directly regulated by an Inspector of Gymnasia, and each Gymnasium is under the command of a Superintendent. An Annual Class of officers for instruction to fill these places is held at Aldershot, which is an additional guarantee of uniformity. Before the men are allowed to commence the course, a strict medical examination is made of each, and his height, chest, forearm, and upper arm are measured in the presence of the Superintendent. These measurements are repeated at the end of the course or when he returns to duty, and the particulars, with

the age and weight of the man, are entered in the prescribed books kept at the Gymnasium. I think the facts justify the official declaration of the character of the exercises, that they "are so arranged that, while the most advanced course is sufficient to test the powers of the strongest, the preliminary course can be performed without injury to the weakest frame."

Besides the general gymnastics, the cavalry recruits are given a course of instruction in fencing, one hour a day for thirty days, and then a course of singlestick drill one hour a day for forty days. Before being allowed to compete for swordsmanship prizes in the riding school, every trained soldier must go through an annual course of singlestick one hour a day for six days. Every encouragement is given to keep up this practice voluntarily, and the instructors are enjoined to pay special attention to the men attending during voluntary hours.

Young cavalry officers on joining are required to take the same course as recruits in these matters; and the same is required of young infantry officers at stations where there are gymnasia. I have seen them at Aldershot under training on the same floor and at the same time as recruits.

A regulation requires the art of swimming to be taught as a military duty at all stations where there are facilities, and at bathing parades the skilled swimmers are distributed as instructors.

Athletic games, comprehended under the general term of "sports," are systematically encouraged in the army. The public competitions are made gala days for the regiments concerned, and military equipment and supplies are provided for the occasion. The sports are looked forward to with interest and participated in with zeal, and the officers and their families and the men of other regiments are present in large numbers as applauding spectators. This wise interest has a most stimulating and healthy effect.

This physical development of the soldier, in whom the fighting instinct is naturally strong, gives to the British army much of the formidableness it possesses, notwithstanding certain deficiencies in the original material and other incidental conditions of the service.



*With the Compliments of the Writer.*

# OBSERVATIONS

UPON THE

MEDICAL DEPARTMENT OF THE BRITISH ARMY,  
MADE IN 1891.

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ABRIDGED FROM AN OFFICIAL REPORT.

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BY BREVET LIEUTENANT COLONEL ALFRED A. WOODHULL,

Major Medical Department U. S. Army.

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